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United States Department of the Interior
Bureau of Land Management

FEASIBILITY REPORT

National Recreation Area

North Platte River and Reservoir System

in Central Wyoming

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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FEASIBILITY REPORT
NATIONAL RECREATION AREA

North Platte River and Reservoir System
in
Central Wyoming

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EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

The purpose of this study is to determine the feasibility of establishing a national recreation area on the upper North Platte River in Wyoming. The area being studied extends from Seminoe Reservoir near Sinclair to Gray Reef Reservoir near Alcova.

A letter sent to the Secretary of the Interior on October 24, 1989, requested that the Bureau of Land Management (BLM) conduct the study and provide a report of feasibility on or shortly after the end of the current fiscal year (September 30, 1990). To accomplish this objective, the BLM established a study team composed of personnel from its Casper and Rawlins district offices, and began contacting as many interested or affected groups as possible, including federal, state, and local agencies and private individuals. Through these and other sources, data were gathered on the area, its managing agencies, its resources, and its uses.

Criteria for Designation of National Recreation Areas

The study applies the criteria from Policy Circular No. 1 of the Recreation Advisory Council to evaluate the suitability of the area for national recreation area (NRA) designation (Pol. Cir. No. 1, 1963). These criteria are as follows:

Spaciousness

National recreation areas should be spacious areas, including within their perimeter an aggregate gross area of not less than 20,000 acres of land and water surface, except for riverways, narrow coastal strips, or areas where total population within a 250-mile radius is in excess of 30 million people.

Carrying Capacity

National recreation areas should be located and designed to achieve a comparatively high recreation carrying capacity in relation to type of recreation primarily to be served.

Significant Recreation Opportunities

National recreation areas should provide recreation opportunities significant enough to assure interstate patronage within the region of service, and to a limited extent should attract patronage from outside of the normal service region.

Need for Federal Involvement

The scale of investment, development, and operational responsibility should be sufficiently high to require either direct federal involvement or substantial federal participation to assure optimum public benefit.

Strategic Location and Accessibility

Although nonurban in character, national recreation areas should nevertheless be strategically located within easy driving distance, i.e., not more than 250 miles from urban population centers which are to be served. Such areas should be readily accessible at all times for all-purpose recreational use.

Recreation as Dominant Use

Within national recreation areas, outdoor recreation shall be recognized as the dominant or primary resource management purpose. If additional natural resource utilization is carried on, such additional use shall be compatible with fulfilling the recreation mission, and none will be carried on that is significantly detrimental to it.

Fulfilling Priority Recreation Needs

National recreation areas should be established in only those areas where other programs (federal and nonfederal) will not fulfill high priority recreation needs in the foreseeable future.

PUBLIC INVOLVEMENT

The BLM conducted scoping to solicit public opinion regarding the feasibility and desirability of an NRA on the North Platte River. The scoping period extended from the end of November 1989 to the beginning of February 1990. During that time, public meetings were held, mass mailings to interested publics were made, and news media coverage occurred. A steering committee composed of key individuals from the Wyoming congressional staffs, the private sector, federal agencies, and local and state government provided guidance on the study process and assisted involvement by the general public.

Substantial local opposition to NRA designation was voiced at the public meetings in Rawlins and Casper. Strong opposition was also found in more than 350 written comments received. Opposition came from ranchers, private citizens holding cabin or trailer site permits, area recreationists and anglers, and the minerals industry. Many individuals felt that formal designation of a national recreation area could interfere with the existing multiple-use management of the area and would be an infringement upon their interests. As a result of this obvious lack of local support, the BLM placed a greater emphasis on the evaluation of recreational opportunities for specific areas within the study area rather than just looking at formal designation. This change in focus was widely supported by the steering committee, other managing agencies, the Wyoming congressional delegation, and the general public.

SUMMARY OF FINDING AND RATIONALE

Our recommendation is that the study area not be given congressional designation as a national recreation area.

The study area meets the requirements of all the criteria except the two criteria which specify recreation as the dominant use and where high priority recreation needs cannot be met by other federal or non-federal programs. NRAdesignation is not the most suitable means to continue multiple-use management in the study area and to meet the outdoor recreation needs of the general public. There is widespread public concern that the effective multiple-use management of the area and the existing public-private partnerships could be jeopardized by formal designation.

Another factor in the finding was the general sentiment among local residents that the existing management agencies, particularly Natrona County Parks and Pleasure Grounds (NCPPG) and the Wyoming Department of Commerce, Division of Parks and Historic Sites (DPHS) (formerly the Wyoming Recreation Commission), are doing an effective job and should retain their management responsibilities.

There are numerous opportunities within the study area that would help resolve the issues and concerns raised during the scoping process. NRA designation is not required in order to effectively accomplish these opportunities.

Even without designation of a national recreation area, the findings of this study and public sentiment indicate that the general management of the area needs to be improved. Designation of a lead management agency to direct federal interests and establish partnerships with non-federal entities is recommended to meet this concern. A lead agency would be responsible for visitor services and use monitoring, ranger patrols and compliance on federal lands, and interagency partnerships and coordination. This agency also would oversee all federally constructed and managed road and facility maintenance on federal lands. Since BLM is the only agency with authority and responsibility for multiple-uses on public lands, that agency is the logical choice to fill this role.

The BLM's assessment of specific recreation opportunities determined that a critical need in the study area is to improve access (both legal and physical). Another need is to provide facilities such as boat ramps and camp units.

In conclusion, the BLM finds that the North Platte study area is not feasible or desirable for a national designation; that the present multiple-use management be retained; and, that the present federal, state, and county partnerships be maintained and strengthened to provide for the recreation needs in the area.

BACKGROUND

PURPOSE OF THE STUDY

The BLM has conducted a study to determine the feasibility and desirability of establishing an NRA on the upper North Platte River in central Wyoming (from Gray Reef Reservoir to Seminoe Reservoir, along with an area known as The Dugway, which is upriver from Seminoe Reservoir). The Carbon County Chamber of Commerce initiated a request that the feasibility study be conducted. This was supported by various organizations in Natrona County. The request was submitted to Senator Malcolm Wallop, Senator Alan Simpson, and Representative Craig Thomas on July 7, 1989.

"Grass roots" support for conducting a feasibility study came from state and local governments, service organizations, special interest groups, and private citizens. Specifically, letters of support were received from the Governor of Wyoming, the DPHS, the Wyoming Game and Fish Department (WGFD), the Carbon County Commissioners, the Rawlins City Council, the Natrona County Commissioners (who passed a resolution in support of the study), the Casper City Council, the Casper Area Chamber of Commerce, the Carbon County Economic Development Corporation, and the Carbon County Planning Commission. Special interest groups such as the Wyoming Wildlife Federation, the Great Divide Flycasters, and the Carbon County Stock Growers Association also supported doing a study, and the National Public Lands Advisory Council passed a formal resolution in support of the study.

The location of the study area in Wyoming is shown on the General Location map; the study area boundary and key points of interest in or near the study area are shown on the Points of Interest map.

AUTHORITY

The Wyoming congressional delegation requested the feasibility study on October 24, 1989. A letter sent to the Secretary of the Interior on that date requested that the BLM conduct the study and provide the Wyoming congressional delegation with a report on or shortly after September 30, 1990. This would provide adequate time for the delegation to review the report before the first session of the 102nd Congress.

The request from the delegation placed several restrictive parameters on the study. The request specified that the study apply the recognized "Criteria for Selection of National Recreation Areas" issued by the Recreation Advisory Council in 1963, focus on a perspective of the multiple-use philosophy, and recognize traditional uses of public and private lands in the area. The delegation also suggested establishment of a steering committee of key individuals from the private and public sectors who could be affected bychanges in management of the area and who could provide a vehicle for ensuring public involvement in the study process. The importance of multiple use was emphasized: the letter specifically directed that "the feasibility study should focus on a perspective of the multiple use philosophy. It would not serve Wyoming or the Department to have a study that examined only a dominant use, such as recreation or environmental protection, and did not recognize traditional uses of public and private lands in the area."

On February 28, the steering committee recommended that no alternative boundaries be considered and that there be no federal designation. That recommendation, along with intense local opposition, resulted in a decision by the BLM management team that the focus of the study would be changed: it would address the feasibility of NRA designation only within the original 1989 boundary. In addition, the study team would explore opportunities for recreation within the boundary that could be enhanced without a federal designation.

SCOPE

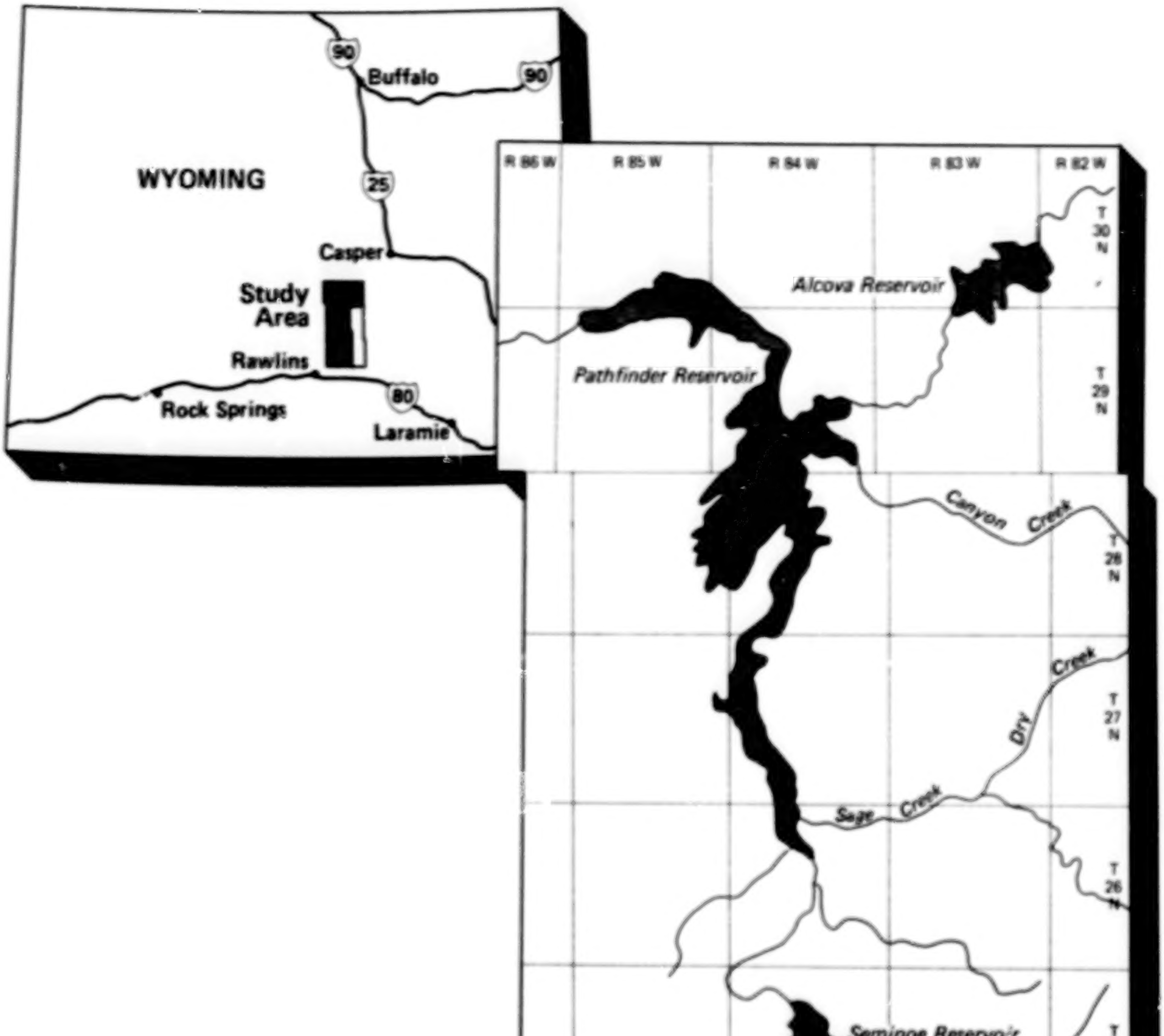
A team of BLM specialists from the Casper and Rawlins BLM district offices was formed to complete the feasibility study. The BLM management review team for this project is made up of the Wyoming BLM State Director; the Deputy State Director, Lands and Renewable Resources; and the Casper and Rawlins district managers.

BLM specialists first compiled a study document containing detailed information about the varied resources and uses in the study area. Copies of that document are on file at the Casper and Rawlins district offices and the BLM Wyoming state office in Cheyenne.

This feasibility report is a summary of the information contained in the study document. References are made throughout the report regarding detailed information contained in the study. The existing conditions and uses of the area are briefly described in this report, and the lands and resources within the original proposed boundary are evaluated for the feasibility of NRA designation.

The feasibility report on a possible North Platte NRA will be reviewed by the Wyoming congressional delegation. On the basis of findings of the study, the Wyoming congressional delegation will determine what action should be taken.

National recreation areas can be authorized only by an act of Congress.



General Location
North Platte National Recreation Area Study

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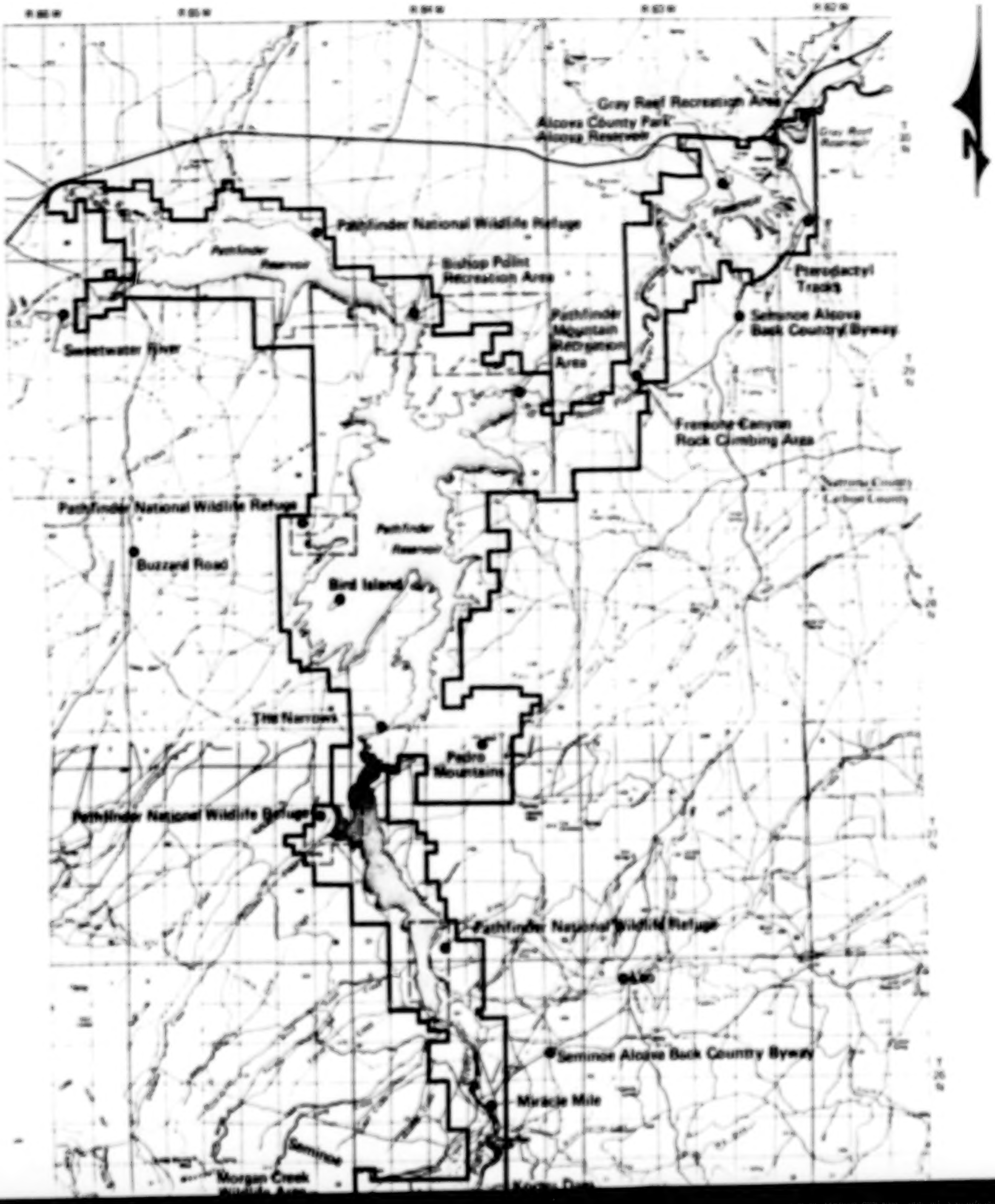
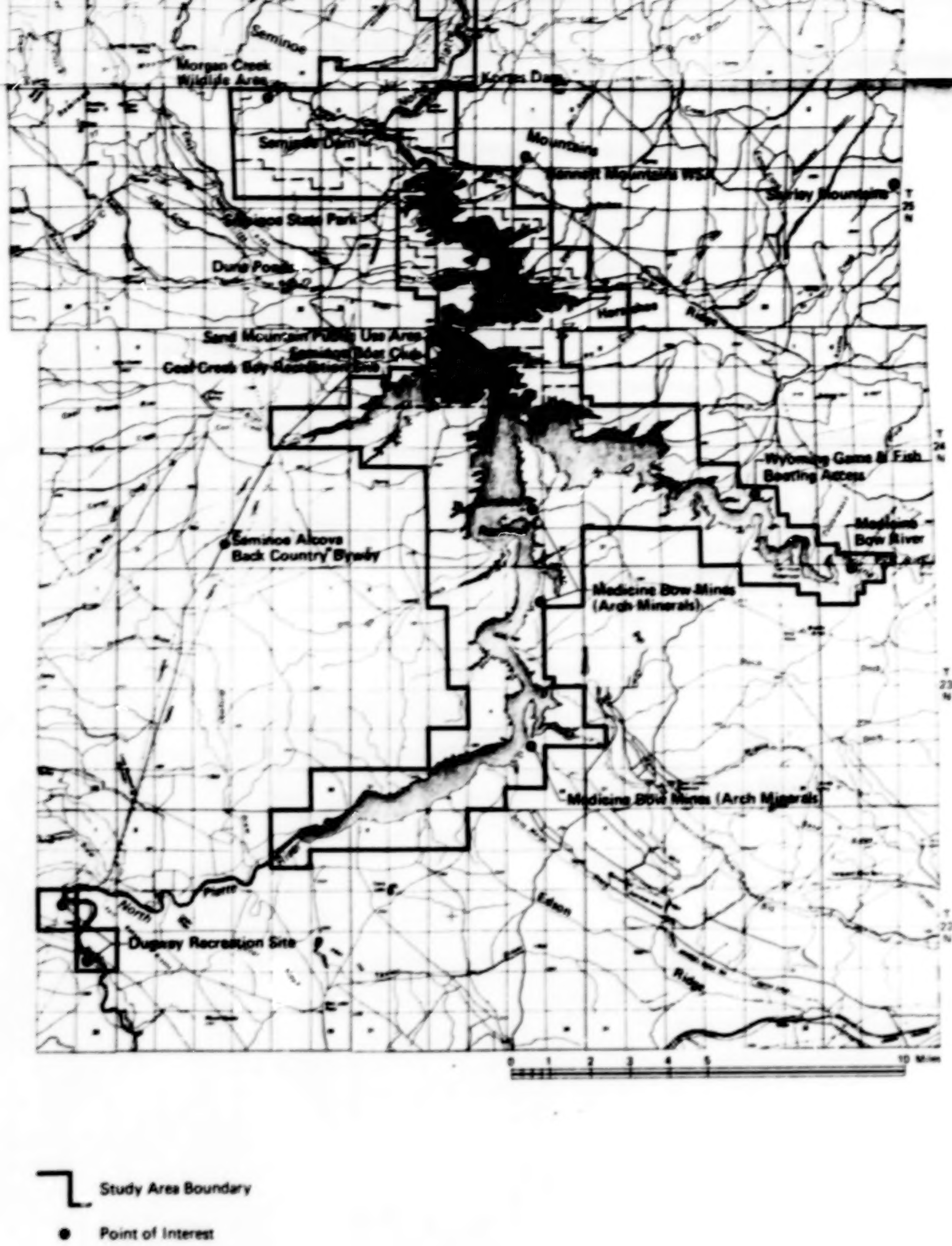


Gray Reef Recreation Area
Alcova County Park
Alcova Reservoir
Gray Reef Reservoir
Pathfinder National Wildlife Refuge
Pathfinder Reservoir
Bishop Point Recreation Area
Pterodactyl Tracks
Seminoe Alcova Back Country Byway
Pathfinder Mountain Recreation Area
Sweetwater River
Fremont Canyon Rock Climbing Area
Natrona County
Carbon County
Pathfinder National Wildlife Refuge
Pathfinder Reservoir
Buzzard Road
Bird Island
The Narrows
Pedro Mountains
Pathfinder National Wildlife Refuge
Pathfinder National Wildlife Refuge
Seminoe Alcova Back Country Byway
Miracle Mile
Seminoe
Morgan Creek



Points of Interest

NATIONAL RECREATION AREAS

Criteria

The Recreation Advisory Council, which was established by President John F. Kennedy in 1962, developed a policy statement governing the selection, administration, and establishment of NRAs. The council's seven primary criteria, listed in policy circular no. 1 (Rec. Adv. Council 1963), were intended to determine if a proposal fitted into the "limited number of areas suitable for NRA designation." The Bureau of Outdoor Recreation, a Department of the Interior agency no longer in existence, was to address NRA proposals and prepare appropriate feasibility studies.

The Recreation Advisory Council also had defined secondary criteria that could be applied as appropriate to the specific proposal. These criteria pertain to NRA proposals that were in areas with a deficiency in supply of outdoor recreation areas; that contained scenic, historic, scientific, scarce, or disappearing resources; or that provided maximum compatibility with the recreation potential of adjacent areas.

The National Park Service (NPS) condensed the seven criteria into four NPS criteria in 1978. Those criteria are now recognized as the guiding principle for NRAs. However, because the congressional delegation specifically identified the criteria in policy circular no. 1, we have prepared this evaluation according to those criteria. It is assumed that if an area fulfills the original seven criteria, it also would meet the NPS criteria.

Existing NRAs

According to the Congressional Research Service, NRAs have been designated by acts of Congress since 1964 (Cong. Rsch. Svc. 1988). NRAs in the United States comprise approximately 7 million acres. Existing NRAs are listed in table 1.

Four NRAs are within a 250-mile radius of the study area: Bighorn Canyon in Montana and Wyoming, Flaming Gorge in Utah and Wyoming, Arapaho in Colorado, and Pine Ridge in Nebraska. Within the same 250-mile radius there are three national parks and nine national monuments.

Although recreation was originally intended to be the predominant use of the nation's NRAs, one-fifth of the NRAs are managed under the principles of multiple use. In the *CRS Report for Congress: National Recreation Areas*, diversity of uses in the nation's NRAs is acknowledged, as follows:

> Lands which Congress has designated as National Recreation Areas... generally allow for several uses.... Each Act designating an NRA is unique, tailored to the characteristics of the area, the general management philosophy of the administering agency, and the determinations of the Congress as to what other activities (and their extent) may be allowed....(Gong. Rsch. Svc. 1988)

TABLE 1

EXISTING NATIONAL RECREATION AREAS

State	Name of NRA	Approximate Acreage	Year Established	Managing Agency
Alaska	White Mountains	1,000,000	1980	BLM
Arkansas	Winding Stair	26,000	1988	FS
California	Golden Gate	73,000	1972	NPS
California	Santa Monica Mountains	150,000	1978	NPS
California	Whiskeytown-Shasta Trinity	297,000	1965	FS/NPS
Colorado	Arapaho	36,000	1978	FS
Colorado	Curecanti[1]	42,000	1965	NPS
Georgia	Chattahoochee River	9,000	1978	NPS
Idaho	Sawtooth	756,000	1972	FS
Idaho/Oregon	Hells Canyon	652,000	1975	FS
Montana/Wyoming	Bighorn Canyon	120,000	1966	NPS
Montana	Rattlesnake	60,000	1980	FS
Nebraska	Pine Ridge	7,000	1986	FS
Nevada/Arizona	Lake Mead	1,497,000	1964	NPS
New York/New Jersey	Gateway	26,000	1972	NPS
Ohio	Cuyahoga Valley	32,000	1975	NPS
Oklahoma	Chickasaw	9,000	1976	NPS
Oregon	Oregon Dunes	32,000	1972	FS
Pennsylvania	Allegheny	23,000	1984	FS
Pennsylvania	Delaware Water Gap	66,000	1965	NPS
Tennessee	Big South Fork	123,000	1974	NPS
Texas	Amistad	57,000	1965	NPS
Texas	Lake Meredith	8,000	1965	NPS
Utah/Arizona	Glen Canyon	1,237,000	1972	NPS
Utah/Wyoming	Flaming Gorge	186,000	1968	FS
Vermont	White Rocks	36,000	1984	FS
Virginia	Mount Rogers	45,000	1966	FS
Washington	Coulee Dam[2]	100,000	1946	NPS
Washington	Lake Chelan	62,000	1968	NPS
Washington	Mount Baker	9,000	1984	FS
Washington	Ross Lake	118,000	1968	NPS
West Virginia	Spruce Knob-Seneca Rocks	100,000	1965	FS
West Virginia	Gauley River	not available	—	NPS
Total		**6,994,000**		

ABBREVIATIONS: BLM = Bureau of Land Management; FS = Forest Service; and NPS = National Park Service.

[1] Does not have congressional authorization as an NRA. Operated under a cooperative agreement of the National Park Service and the Bureau of Reclamation.

[2] Does not have congressional authorization as an NRA. Operated under a cooperative agreement of the National Park Service, the Bureau of Reclamation, and the Bureau of Indian Affairs.

PUBLIC INVOLVEMENT

ISSUES AND CONCERNS

Scoping

A steering committee was formed with membership representing the major users, resources, and interests in the study area: stockgrowers, mineral industry, state and local governments, wildlife and fish, irrigation, commerce, landowners, recreationists, homeowners, boat clubs, water resources, and congressional delegation staffs. The Public Involvement appendix contains a list of the 32 committee members.

After the BLM team met with local interest groups in Rawlins and Casper and with the multiple use advisory councils for both BLM districts, the first meeting of the steering committee was scheduled so that the team could learn what issues the committee thought were important for consideration in the study. The formal "scoping" process was then initiated as a way for the general public to identify issues or concerns that should be considered in the study.

The BLM scheduled a steering committee meeting and two public meetings for December 1989. A news release was prepared and letters were sent to persons on the mailing list to announce the public meetings. The steering committee met on December 18, then the BLM conducted evening public meetings in Casper and Rawlins on December 18 and 19.

The public meetings generated many oral and written comments relative to the feasibility study. The scoping period ended January 26, 1990, but the BLM has accepted any information relevant to the study throughout the study period.

The steering committee met on February 8, 1990, to discuss issues raised by the public. The group met again on February 28 to define area boundary alternatives that would be carried forward in the study. The consensus of the 22 members present was that we should not consider any alternatives to the original boundary shown on the "Preliminary Study Area" map of December 1989.

Summary of Public Comments

Comments came from individuals, businesses, government agencies, and various types of clubs and organizations. As written comments were received, each was entered into a log and assigned a number. These comments were subsequently grouped into 12 categories, which are summarized here. More detailed discussion is available in the feasibility study.

Recreation Facilities

Many commenters identified locations in the study area where they said additional recreational facilities are needed, and some specified exactly what types of developments they would like to see added. A number of commenters identified the need for more restrooms, camping areas, and boat launches (particularly low-water ramps) at Pathfinder and Seminoe, and many said that existing facilities at Pathfinder should be improved.

Conversely, other comments expressed concern that increased development would adversely affect the quality of recreation. As an example, many said that no additional development is needed at Alcova; a common sentiment was that Alcova is developed and being used to capacity now. In general, comments suggested that development be minimal; the writers seemed to believe that basic services should be provided but that the recreational flavor of the area should not be changed.

Comments relating to existing developments on leased lands (such as the Alcova cabin and trailer sites, the Pathfinder Marina, and the Seminoe Boat Club) indicated that these uses should be continued and that more opportunities for this type of public-private partnership development should be made available.

Management and Development

The public identified many issues related to management and development of the study area. The comments generally were about the complexity of management and what government agency should manage the area, or questions were asked about what use restrictions, regulations, and fees would be enacted. Other comments revealed apprehension that private property would be lost through condemnation or concern over diminution of the existing public-private partnership.

Some commenters expressed concern about the future of present agreements, leases, and concessions; others commented about increased federal presence and the possibility that local control would be lost. A number of comments related to the possibility that there would be increased pressure on existing facilities such as those at Alcova, which are already utilized at or over capacity.

Boundary Alternatives

Many commenters said they were concerned with how the study area boundaries would be determined. Others indicated their belief that the boundary of an NRA would change after the study was completed.

Commenters suggested several alternative boundaries for the study area. Some suggested that Glendo and Guernsey reservoirs and the segment of the North Platte River between them should be included in the study area. Some commenters said the Dune Ponds should be included as well. Several additions of areas adjacent to the original study area were recommended, such as the Bennett Mountains Wilderness Study Area (WSA).

Some commenters said all or some portion of certain reservoirs should be dropped from consideration. For example, many comments from people who live or own property in the Alcova area indicated that they do not want Alcova included in the study area or in an NRA. Other comments suggested that all lands in Natrona County should be excluded from study or from possible designation. Concerns also were expressed about the fact that the study area includes part of an operational coal mine.

Lands, Access, and Transportation

Written comments from private landowners and owners of private improvements on leased federal lands expressed much concern about property rights. Concern about condemnation and the effects of national designation on land values were other major concerns in written comments, and landowners and public land users wrote of their concern about access. The need for more access to the shoreline of Seminoe and especially to the east side of Pathfinder was mentioned frequently. The cost of construction and maintenance of roads was a major concern.

Economics

The economic effect of national designation was an important concern of many commenters. Economic benefit was a motivating force for initiation of the study, and some commenters said an NRA and the resulting tourism would improve the economic stability of the surrounding area. However, others commented that tourism does not benefit the state from an economic standpoint, and that no economic enhancement would result from an NRA.

Many comments identified the need for analysis of the benefits versus the costs of designation and development of an NRA. Concerns were raised that the counties' tax bases would be diminished by designation. Other commenters said they believed NRA designation would decrease ranch revenues and result in reduced land values. These comments about economics suggest the need for an extensive evaluation of factual information on visitor characteristics, expectations, preferences, and motivations as well as the costs and benefits associated with a national designation.

Water Resources

Water is the key to recreation in the study area, and major concerns were expressed about water rights, control and permitting of water, water storage, and the present overcommitment of North Platte waters. Many of the comments received about water resources were related to functions under the control of the Bureau of Reclamation (BOR) or the state. This was particularly true of comments about water rights, water use, and water levels and storage in the reservoirs. Other comments favored the establishment of minimum pools for recreation and establishment of instream flows, especially in the river section between Pathfinder and Alcova reservoirs. Some commenters expressed apprehension about reduced availability of water for agricultural use.

Visitor Services and Safety

Most comments about visitor services and safety concerned law enforcement. Many commenters said that law enforcement is already a problem and that it would get worse if an NRA should be designated. Commenters expressed concern about what agency would provide law enforcement, medical services, and fire protection for the area. Many said that vandalism, trespassing, poaching, and harassment of livestock and wildlife would occur or increase if designation increased recreational use of the area. In addition to law enforcement concerns, commenters said that garbage and sanitation problems would result from designation and increased use.

Wildlife and Fisheries

Most comments in the category of wildlife, fisheries, and threatened and endangered species were related to hunting and fishing in an NRA and to who would manage those uses. Some comments suggested that hunting would not be allowed if the study area should be designated an NRA. Some commenters expressed concern about possible increases in the cost of hunting licenses; some forecast "a proliferation of hunting clubs"; others wanted to know who would have jurisdiction over hunting. Some commenters asked if increased use of the area would have adverse effects on raptor nesting areas or lead to harassment of wildlife. Greater fishing pressure was the concern of some commenters, as was a perceived need for instream flows to ensure fisheries.

Livestock Grazing

Most comments about grazing came from local grazing lessees and livestock operators. Foremost of the issues raised was whether livestock grazing would be allowed to continue in an NRA. Other comments indicated concern about access to water for livestock and about fencing of all or portions of the area. Central to all comments received about livestock grazing was a prevailing concern that NRA designation would have a negative effect on livestock operations.

Minerals

The major concerns that commenters expressed about minerals were related to the effect of national designation on existing mineral rights and the potential that minerals might be excluded from future development.

Cultural Resources

Comments received about cultural resources were related primarily to site protection. They indicated concern about protection of the many archeological sites known to exist in the area. Commenters indicated that they favored preservation and interpretation of the sites.

Other Issues and Concerns

Comments that were categorized as "other" were generally related to the study process and to what the overall impact of a national designation might be. Some commenters expressed concern about the short time allotted for conducting the study. Concern also was expressed about map accuracy. A question was asked: Would an NRA represent the "highest and best use" of the area? Other commenters asked what contacts would be made, who would review the reports, and what benefits would result from NRA designation.

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THE STUDY AREA

AGENCY RESPONSIBILITIES

Introduction

Public resources in the study area are administered by three agencies within the U.S. Department of the Interior: the BLM, the BOR, and the U.S. Fish and Wildlife Service (USFWS). Two state agencies, the Wyoming Game and Fish Commission (WGFC) and the DPHS, also have administrative responsibilities, as do several local governmental entities; for example NCPPG.

The responsibilities of various federal, state, and local agencies are explained in the following sections. The Existing Documents appendix to the feasibility study contains more detailed information on contracts and laws related to agency responsibilities.

Bureau of Land Management

To manage the BLM-administered public land in the study area, the BLM develops resource management plans and associated activity plans as a cooperative effort with the BOR, the WGFD, and the USFWS.

Except for operations areas and developed recreation areas, grazing management of all BOR and USFWS withdrawn lands in the study area has been transferred to the BLM.

The BLM administers federal minerals on all federal lands in the study area, including issuance of oil and gas pre-lease notices and permits, lease adjustments, lease operations, inspection and enforcement, coal leasing administration, and salable minerals.

The BOR depends on the BLM and local county fire organizations for fire suppression on BOR lands in the study area.

Major planning documents for two BLM resource areas contain overall planning guidance for public lands in the study area. Planning decisions in the record of decision for the resource management plan/environmental impact statement (RMP/EIS) for the Platte River Resource Area (Casper District) govern management of resources in the northern part of the study area (USDI, BLM 1985).

The proposed RMP/final EIS for the Great Divide Resource Area (formerly Medicine Bow and Divide Resource Areas, Rawlins District) contains proposed decisions for management of the southern part of the study area (USDI, BLM 1988).

Two existing and one forthcoming BLM habitat management plans (HMPs) give direction for management of wildlife habitat in the study area. Two BLM recreation activity plans have been proposed for the study area, and an off-road vehicle (ORV) implementation plan for the Great Divide Resource Area are scheduled to be written after October 1990.

Bureau of Reclamation

The BOR operates the five reservoirs in the study area in accordance with project authorizations, water rights, and the provisions of the North Platte Decree of 1945. Water is stored in the reservoirs by the BOR to meet contractual commitments and fulfill water rights of North Platte irrigators. The BOR also operates the Alcova, Fremont Canyon, Kortes, and Seminoe power plants.

The BOR is not authorized to administer withdrawn or acquired lands for recreational use, so its administration of lands other than those covered by agreements with state and county agencies is only custodial. However, the agency does make small appropriations for recreation management, preservation of natural resources and, where necessary, to correct unsafe conditions.

Reservoir area management plans have been prepared by the BOR for Alcova and Gray Reef reservoirs (USDI, BOR 1984), Pathfinder Reservoir (USDI, BOR 1982a), Seminoe Reservoir (USDI, BOR 1982c), and a draft plan for Kortes Reservoir and the "Miracle Mile" (USDI, BOR 1983a). Information from those plans was used in the development of the feasibility study and this report.

The plans cited above contain information on the date of origination and the purpose of each reservoir project, the acquisition of land for the projects, provisions for rights-of-way and access, management of fish, wildlife, recreation, grazing, and minerals, and law enforcement.

U.S. Fish and Wildlife Service

The Pathfinder National Wildlife Refuge (PNWR) was established to provide habitat for waterfowl and other migratory birds. Numerous changes in size, official name, and management purpose have occurred over the years since the refuge was established.

The primary functions of the PNWR are provision of habitat for migrating waterfowl and conservation of fish and wildlife resources and associated habitat. Hunting and fishing regulations, the primary means of resource protection and management, are in accordance with all applicable state regulations plus additional federal regulations.

As a management tool, grazing is permitted on refuge lands for waterfowl habitat management. Grazing objectives on refuge lands are to manipulate vegetation to maintain or increase wildlife productivity and species diversity over a sustained number of years at a minimum cost.

Management options at PNWR are limited by lack of funds and personnel and by not having recognized water rights. The current management strategy is most appropriately described as custodial: few management actions or projects have taken place for a number of years. There have been no census efforts to determine the status of bird use in the refuge since 1965.

Planning, development, and management of the refuge probably will remain custodial and protective of existing wetlands and wildlife habitat. No personnel are stationed at PNWR, and there are no physical facilities present. The USFWS administers the refuge as part of the Arapaho NWR in Walden, Colorado.

Wyoming Game and Fish Department

According to Wyoming statutes, the WGFC has responsibility for the enforcement of all state game and fish laws as well as jurisdiction over water surfaces, including those on federal land. Under the direction of the WGFC, the WGFD manages the state's wildlife and fisheries and regulates the water surface for boating, fishing, hunting use, and stocking of fish.

Through a contract agreement between the BOR and the WGFC, the WGFD administers the Morgan Creek drainage as critical winter range for bighorn sheep and elk. The WGFD has completed the *Comprehensive Management Plan for the Morgan Creek Wildlife Habitat Management Unit* (1983). The Morgan Creek watershed is used for a water supply for the Bureau of Reclamation camp at Seminoe Reservoir. The plan provides for public hunting and other limited outdoor recreational activities. An updated management plan for the unit may be obtained from the WGFD.

In accordance with a contract agreement between the BOR and the WGFC, the WGFD also administers the recreation resources of BOR withdrawn or acquired lands at the river section between Kortes and Pathfinder reservoirs (the Miracle Mile).

Wyoming Department of Commerce, Division of Parks and Historic Sites

The DPHS (formerly the Wyoming Recreation Commission) administers designated recreation areas at Seminoe Reservoir according to an agreement with the BOR. The commission has developed the facilities at Seminoe State Park and manages recreational use there.

Natrona County Parks and Pleasure Grounds

NCPPG administers designated recreation areas at Alcova, Gray Reef, and Pathfinder reservoirs under contract with the BOR. The contract covers most of the BOR withdrawn lands available for recreation at Alcova and Gray Reef and a small portion of the withdrawn land available at Pathfinder. NCPPG also administers concessions such as the marinas at Alcova and Pathfinder. In addition, NCPPG administers recreation permit sites, including club areas, trailer courts, and cabin areas at Alcova.

PHYSIOGRAPHY AND GENERAL GEOLOGY

The study area is located in the Middle Rocky Mountain (or Wyoming) physiographic province. The area is generally a lowland consisting of the reservoir-covered North Platte River valley and includes significant granite mountain ranges and extensive sand dune areas.

Elevations in the study area range from approximately 5,000 to 8,500 feet above sea level. The higher elevations are in the Seminoe, Bennett, and Pedro mountains near the center of the study area. The lowest elevations are to the north, in the vicinity of Alcova Reservoir.

CLIMATE

Precipitation in the study area ranges from 10 to 12 inches at elevations below 7,500 feet. Most precipitation occurs as snow during late winter and early spring.

The frost-free season for most of the area at elevations between 6,000 and 7,800 feet ranges from 90 to 100 days. At elevations below 6,000 feet, the frost-free season ranges from 100 to 130 days.

Temperatures exhibit extreme seasonal and daily fluctuations. Typical July temperatures range from the mid-80s Farenheit during the day to the low 50s Farenheit at night. Typical January temperatures are lows of around 10°F and highs of 30°F.

Winds are predominantly southwest. Wind speeds during summer usually are less than 10 miles per hour, but weather fronts and associated wind can be severe. From fall through spring, wind speeds can average 20 to 30 miles per hour, and gusts of more than 50 miles per hour are not uncommon.

SOILS AND VEGETATION

Soil Map Units and Vegetation Types

Soils throughout the study area are quite variable. Soils on mountain terrain, such as in the Seminoe and Pedro mountains, are typically less than 20 inches deep and commonly have surface boulders and cobble with rock outcrops. Some areas on north and east aspects have thick, dark surface layer (up to 30 inches thick) which is high in organic matter. Dominant vegetation types in mountainous terrain are broadleaf, conifer, mountain shrub, sagebrush, and rockland.

Soils in uplifted areas, such as hogbacks, are predominantly shallow, less than 20 inches deep, with rock outcrops common. Dominant vegetation types in uplifted areas are mountain shrub, sagebrush, saltbush, or barren.

Soils on upland areas are typically more than 60 inches deep and have a soil layer high in calcium carbonate within 20 inches of the soil surface. Gravelly and cobbly surface textures may be common. The dominant vegetation type in upland areas is sagebrush.

Soils formed on saline or alkaline parent material are on broad, gently sloping topography, occasionally with steeper terrace breaks and escarpments. These soils are moderately deep (20 to 40 inches) to deep (more than 60 inches). The dominant vegetation types are sagebrush, saltbush, and occasionally greasewood.

Sand dunes occur on undulating longitudinal dune topography. Soils are normally more than 60 inches deep. The dominant vegetation type in the sand dune areas is sagebrush.

Rare Plants

No threatened or endangered plant species are known to exist in the study area; however, one species has been listed as proposed for threatened or endangered status. Persistent sepal yellowcress *(Rorippa calycina)*, is a species restricted to old shorelines of rivers, ponds, and lakes. Fifteen populations of persistent sepal yellowcress have been located along Seminoe Reservoir and the Medicine Bow River.

WATER RESOURCES

Reservoirs

There are five reservoirs in the study area: Seminoe, Kortes, Pathfinder, Alcova, and Gray Reef. Seminoe and Pathfinder reservoirs are the largest storage reservoirs, having a total capacity of 1,017,273 acre-feet and 1,016,507 acre-feet, respectively. Alcova Reservoir has a total capacity of 184,405 acre-feet. Kortes and Gray Reef reservoirs were constructed principally for reregulation purposes (for power generation or irrigation diversion) and the combined total capacity of these reservoirs is minimal in comparison to Seminoe and Pathfinder reservoirs.

Tables 2 and 3 provide information on reservoir allocation capacities and surface acreage of water. Reservoir surface elevation levels vary greatly between dead capacity and total capacity elevations and between inactive capacity and total capacity elevations. Reservoir elevation fluctuations on Pathfinder and Seminoe exceed 100 feet between the inactive and total capacity levels. These fluctuations create problems in placement of recreation facilities at Pathfinder and Seminoe because fluctuating water levels can leave docks, ramps, or other recreation facilities far removed from water.

Seminoe

Seminoe dam, power plant, and reservoir (see the Points of Interest map) were constructed during 1936-1939 to provide storage for irrigation water and to generate hydroelectric power. The water level of Seminoe Reservoir fluctuates a great deal over the course of a given year because of its upstream location in the North Platte River system. The water elevation is lowest during March of each year when the storage is drawn down in anticipation of the spring runoff. By mid-July the reservoir fills to its maximum elevation.

Kortes and the Miracle Mile

Lying immediately downstream from Seminoe Reservoir, Kortes serves as an afterbay for the Seminoe dam and power plant approximately 2 miles upstream. Water released from Seminoe Dam passes through the turbines at Kortes Dam and is reregulated by Pathfinder Reservoir. Kortes Reservoir provides an active conservation pool of 3,085 acre-feet and a total capacity of 4,765 acre-feet.

The Miracle Mile, which is approximately 5.5 miles long, extends from Kortes Reservoir downstream to the bound-

TABLE 2

RESERVOIR ALLOCATION CAPACITIES
(in acre-feet)

Reservoir	Dead Capacity[1]	Inactive Capacity[2]	Active Conservation Capacity[3]	Total Capacity[4]
Seminoe	556	31,114	985,603	1,017,273
Kortes	151	1,515	3,073	4,739
Pathfinder	7	31,398	985,102	1,016,507
Alcova	91	153,711	30,603	184,405
Gray Reef	56	—	1,744	1,800
Totals	**861**	**217,738**	**2,006,125**	**2,224,724**

[1] Dead capacity is the reservoir capacity from which stored water cannot be evacuated by gravity. This is usually defined by the invert of the lowest outlet in a reservoir.

[2] Inactive capacity is the reservoir capacity, exclusive of and above the dead capacity, from which stored water is normally not available because of physical restrictions or operating agreements. The inactive capacity may not be related to any physical feature of a dam; rather, it may be a design feature of the dam. Usually, inactive capacity is established for two purposes: (1) to provide minimum operating head on a power plant, and/or (2) to provide minimum head on canal or river outlets to maintain a desired discharge.

[3] Active conservation capacity is the reservoir capacity assigned to regulate reservoir inflows for irrigation, power, municipal and industrial use, fish and wildlife, navigation, recreation, water quality, and other purposes. It does not include exclusive flood control or joint use capacity. It extends from the top of the active conservation capacity to the top of the inactive capacity.

[4] Total capacity represents the collective total of the dead capacity, inactive capacity, and active conservation capacity. Total capacity is used to express the total volume of water which can be impounded.

ary of Pathfinder Reservoir. The total distance depends on the volume of water in Pathfinder Reservoir (see the Points of Interest map).

Pathfinder

Pathfinder Dam (see the Points of Interest map) was originally constructed to form a reservoir for irrigation. The facility also provides many compatible benefits: electric power generation, recreation, fish and wildlife, and flood control. At Pathfinder Reservoir, released water is stored for future irrigation needs and is used to generate power when it is released through Fremont Canyon Power Plant into Alcova Reservoir. The water level of Pathfinder Reservoir also fluctuates a great deal over the course of a given year. The lowest water elevation is in September, and the average maximum water surface on Pathfinder is in April and May.

Alcova and Gray Reef

Alcova Dam (see the Points of Interest map) was constructed to divert water into the Kendrick Project's Casper Canal. Alcova Power Plant was authorized and built after completion of Alcova Dam. Water released through the power plant is for satisfying valid existing water rights and to release stored floodwater.

Gray Reef Dam is a reregulation structure built to allow peak power generation at Alcova Power Plant. The spillway operation of the dam maintains a minimum river flow of 330 cubic feet per second (cfs).

Surface Water

Mountain snowmelt during April, May, and June contributes to more than 66% of the North Platte River's

TABLE 3

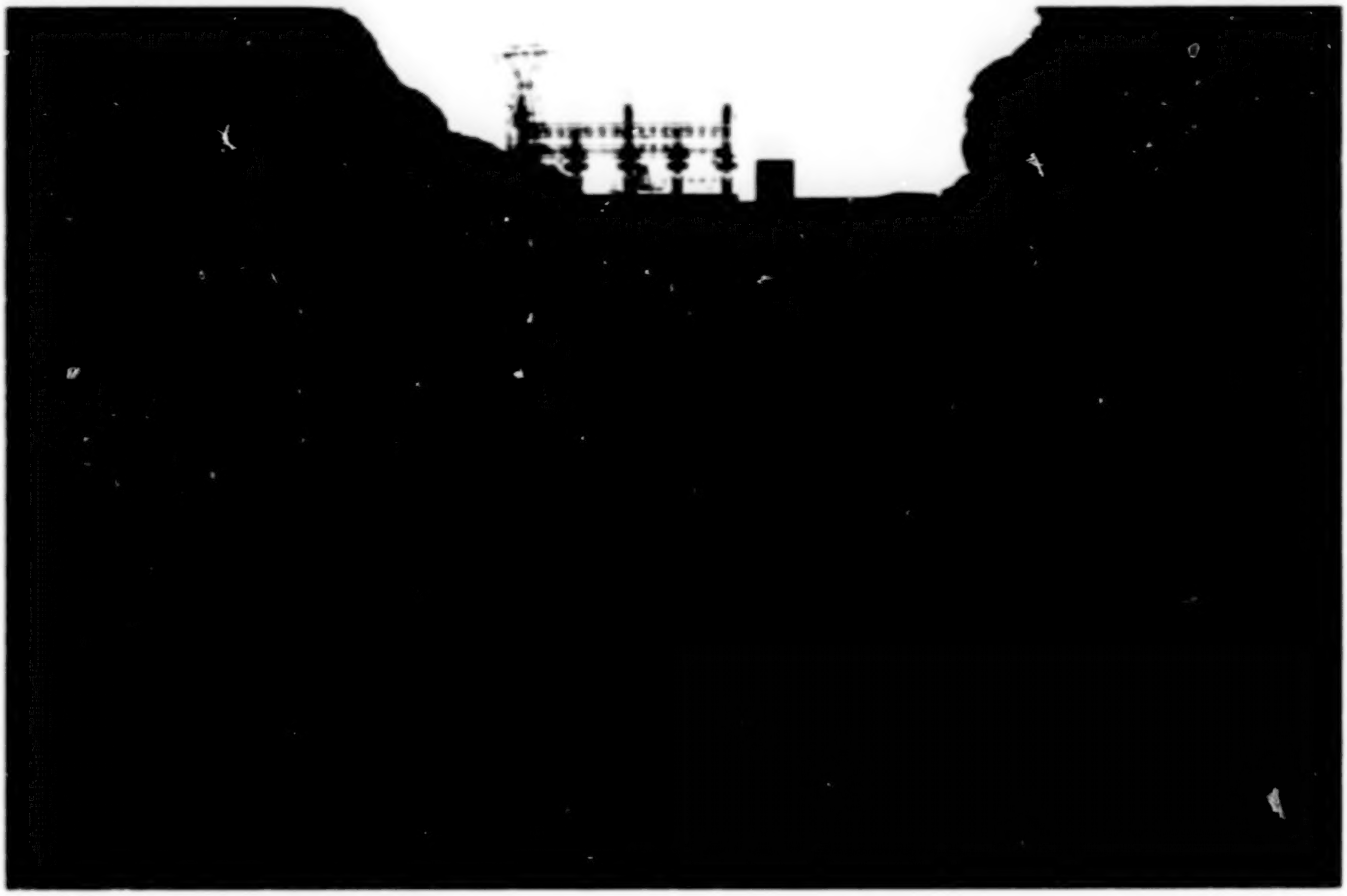
RESERVOIR SURFACE ACREAGE[1]

Reservoir	Dead Capacity[2] (minimum surface acreage)	Inactive Capacity[2] (minimum surface acreage to provide minimum head to powerplants and canals)	Total Capacity[2] (maximum surface acreage)
Seminoe	84	1,446	20,291
Kortes	10	46	83
Pathfinder	4	2,235	22,014
Alcova	24	2,230	2,471
Gray Reef	24	24	182
Total Acres	**146**	**5,981**	**45,041**

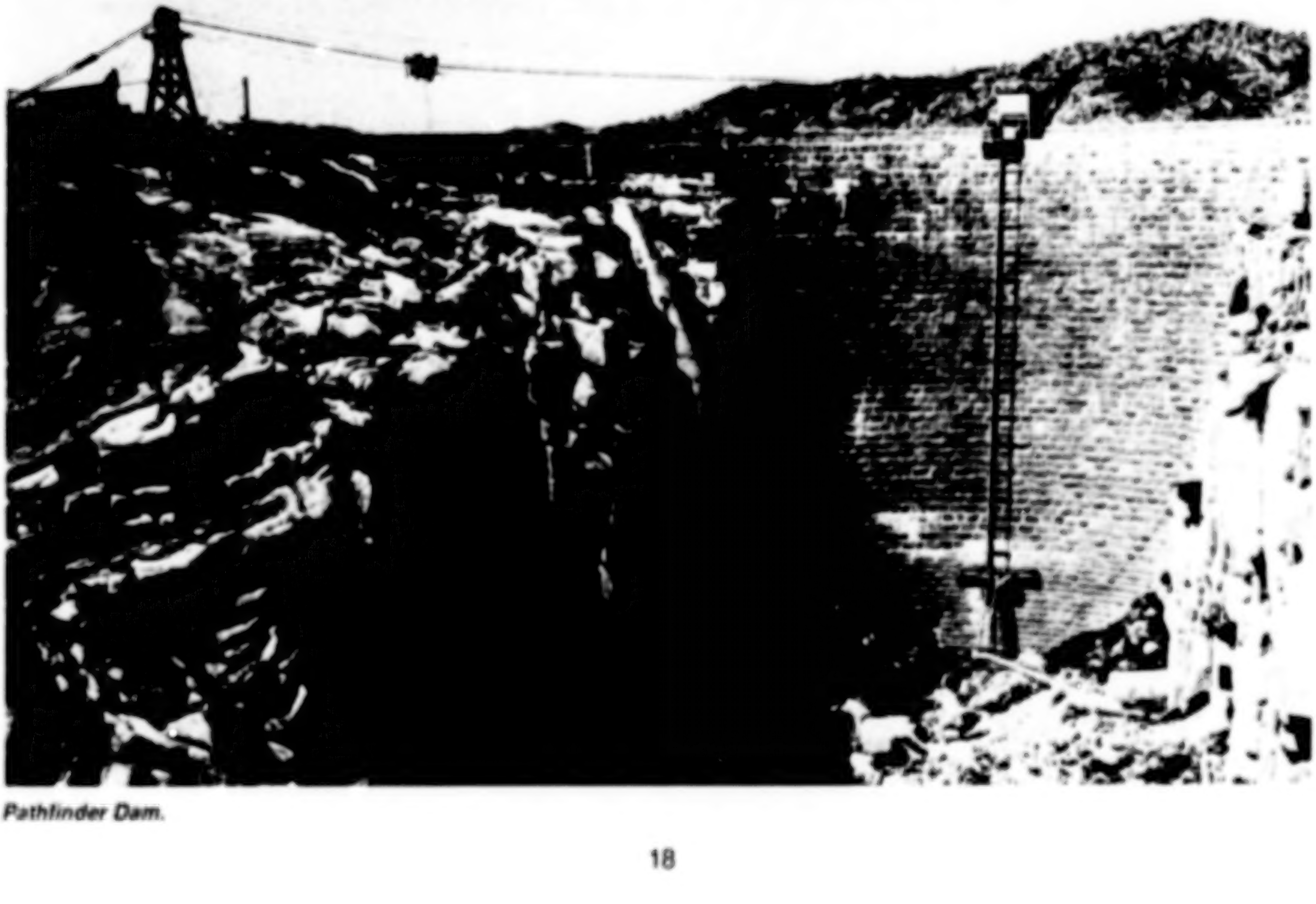
[1] Surface acreages are derived from BOR surveys and calculations done in 1941, 1950, 1953, 1954, 1958, 1969, and 1973.

[2] Defined in footnote to table 2.

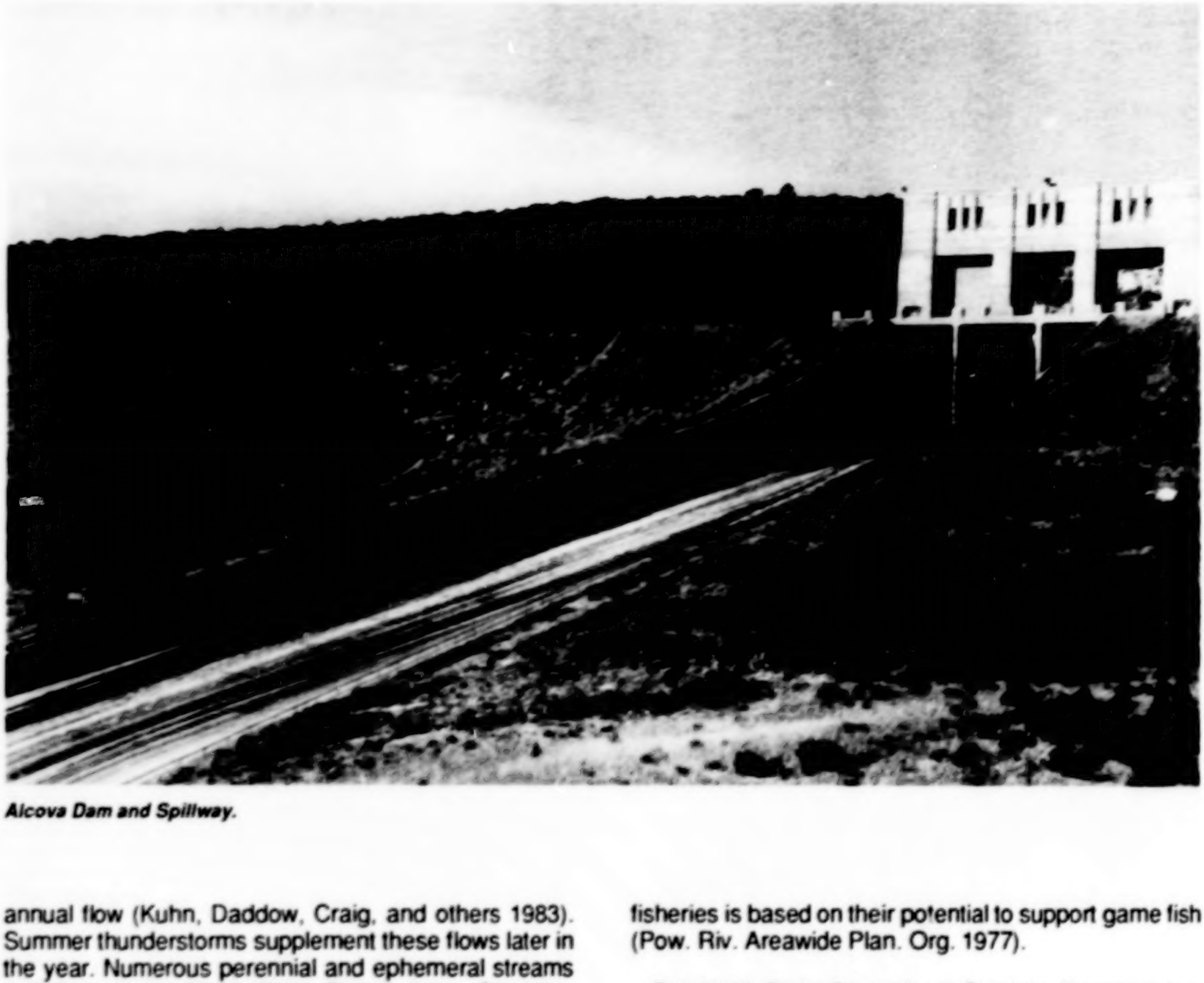
Seminoe Dam.



Kortes Dam Outflow begins the Miracle Mile.



Pathfinder Dam.



Alcova Dam and Spillway.

annual flow (Kuhn, Daddow, Craig, and others 1983). Summer thunderstorms supplement these flows later in the year. Numerous perennial and ephemeral streams contribute to the North Platte River's flow. Seminoe, Kortes, Pathfinder, Alcova, and Gray Reef reservoirs greatly moderate the rate of flow of the North Platte River in the study area.

The mean annual flow for the North Platte River above Seminoe Reservoir is 1,150 cfs, with an average minimum flow of 467 cfs and an average maximum flow of 2,170 cfs. The mean annual streamflow for the North Platte River below Alcova near Goose Egg is 1,360 cfs, with an average minimum flow of 717 cfs and an average maximum flow of 2,570 cfs.

Water quality of the North Platte River upstream and downstream of the study area is generally good, according to state of Wyoming standards. The amounts of dissolved oxygen and dissolved solids and the presence of certain pollutants are considered when streams are classified as class I, class II, or class III (Wyo. St. Engr. Ofc. 1971). Classification of streams as class I, II, or III fisheries is based on their potential to support game fish (Pow. Riv. Areawide Plan. Org. 1977).

The North Platte River above Seminoe Reservoir is a Class II stream. Suspended sediment entering the North Platte River from Sage Creek causes the change from a Class I stream to a Class II stream.

The Miracle Mile stretch of the North Platte River is a Class I stream. Upstream Seminoe and Kortes reservoirs trap sediments, improving water quality in the Miracle Mile so that it meets the Class I criteria. This section of the river supports a Class I, or "blue ribbon," fishery.

Groundwater

Groundwater is used extensively in the area for domestic and livestock purposes. The rural population and livestock are highly dependent on the availability of groundwater. Most uses require only low to moderate well yields and therefore are fairly certain of a constant water supply after proper construction and development of the source wells (Wyo. St. Engr. Ofc. 1971).

Water Uses, Regulations, and Projects

Commitments and Agreements

The use of water in the study area is regulated by the North Platte River Decree of 1945 and an amendment to the decree dated 1953. The storage water in the North Platte River system (federal reservoirs) is stored by the BOR to meet contractual commitments and fulfill water rights to contractors on request. During the years when water shortages occur, the BOR allocates the available supply to the contracting irrigation districts who then decide when to use the available water (Lawson 1990b).

The use of water for municipal, industrial, and domestic purposes or for livestock watering is of small extent in the study area. The North Platte River decree provides that these uses of natural flow water are not affected or restricted by the order of the decree.

The Secretary of the Interior in 1968 authorized a minimum instream flow of 500 cfs on the several miles of the North Platte River from Kortes Dam to Pathfinder Reservoir, the Miracle Mile, provided that sufficient water is available. If water is needed by irrigators, this minimum flow may not be maintained. The minimum flow helps to support existence of the blue ribbon fishery in the Miracle Mile.

Any change in present reservoir operations and use of water regimes may require revisions in Supreme Court decrees, federal regulations, congressional authorizations, state water rights, and existing contracts with compensation made to the irrigators for their losses (Lawson 1990b).

Water Uses

Irrigation.—The primary purpose for water stored in Seminoe, Kortes, and Pathfinder reservoirs is for downstream irrigation. The system furnishes irrigation water to over 440,000 acres of land in Wyoming and Nebraska.

The *Wyoming Water Planning Program Report No. 9* indicates that the total irrigated acreage in the North Platte River Basin in Wyoming, determined by 1969 field examination, is 552,760 acres.

Power Generation.—The secondary priority for operation of the reservoirs in the study area is for power generation. The generating capacity of the four hydroelectric power plants in the study area and the minimum water levels in each reservoir required to generate electricity are shown in table 4. The amount of power generated annually varies, depending on spring runoff, reservoir storage, and irrigation demands downstream.

Fisheries and Recreation.—No storage capacity has been allocated for fisheries or recreational uses; irrigation is the primary purpose and power generation the secondary purpose of the reservoirs in the study area. However, Alcova Reservoir is managed in a way that does protect recreational uses.

TABLE 4

GENERATING CAPACITY AND WATER LEVELS OF POWER PLANTS IN THE STUDY AREA

Plant	Installed Capacity[1] (kilowatts)	Minimum Reservoir Water Elevations for Power Generation[2] (feet)
Seminoe	32,400	6,239
Kortes	36,000	6,092
Fremont Canyon (Pathfinder)	48,000	5,746
Alcova	36,000	5,479

[1] Wyoming State Engineer's Office, *Wyoming Water Planning Report No. 9* (1971).

[2] Computations from the Bureau of Reclamation, United States Department of the Interior.

Power Generating Station at Alcova Dam.

LANDOWNERSHIP

Historical Background

The arrangement of landownership in the study area has been shaped by land disposal actions, withdrawal of public land from entry under the various land laws or the general mining law, and acquisition of land by the BOR. The Railroad Land Grant Act of 1864 led to creation of the "checkerboard" landownership pattern, in which alternate sections are privately and federally owned. Between 1897 and 1903, every odd-numbered section in the southern end of the study area was patented to the Union Pacific Railroad as compensation for constructing the transcontinental railroad. Union Pacific received both the surface estate and the mineral estate and subsequently sold the surface estate to other individuals while retaining ownership of the mineral estate.

As federal water planners began work on the North Platte River Reclamation Project, protective withdrawals were placed on public lands, closing them to entry under land or mining laws to forestall speculation entries. The withdrawals will remain in effect until the lands are no longer needed for reclamation purposes. Approximately 72,580 acres of land in the study area are withdrawn.

The BOR withdrawals provide that withdrawn lands around Alcova are not available for livestock grazing, mining locations, or mineral leasing. Public lands within a 1-mile radius from Pathfinder, Kortes, and Seminoe dams are not available for mineral exploration or development. Lands in the PNWR are not available for mineral development.

Present Landownership

There are approximately 151,320 acres within the study area boundary. Approximately 44,570 acres (29%) are inundated by water when the reservoirs are at total capacity. Another 87,590 acres (58%) are in federal ownership under the administration of the BOR, the USFWS, or the BLM. Approximately 1,410 acres (1%) are state trust lands. Additionally, there are approximately 17,750 acres (12%) of private lands within the study area boundary.

From the southernmost part of Seminoe Reservoir north to within 3 miles of Seminoe Dam, landownership is

TABLE 5

LANDOWNERSHIP ACREAGE[1]
(rounded to nearest 10 acres)

Ownership	Surface Estate	Mineral Estate	Flooded
Private	17,750	11,840	—
State	1,410	1,520	—
Federal	87,590	137,960	44,570
Total acreage in study area: 151,320			

[1] Acreages are derived from 1989 and 1990 calculations using the BLM's Geographic Information System, and 1989 and 1990 research of the BLM's Public Land Status records and Natrona and Carbon Counties Assessors' records.

in a checkerboard pattern (see the Landownership map). The alternating sections of private and public ownership create access problems and make land management difficult. Approximately 14,760 acres is privately owned by four parties.

The BOR has acquired both surface estate and mineral estate below the high water line of odd-numbered sections that are partially covered by water when the reservoir is full. The rest of Seminoe Reservoir is wholly owned by the federal government (see the Withdrawls map).

The federal government owns most of the land north of the checkerboard, through Seminoe Dam, Kortes Reservoir, and the Miracle Mile. There are three strips of state land 1/4 mile by 1 mile along the Miracle Mile.

Almost all the land around Pathfinder Reservoir is federally owned (see the Landownership map). A few scattered tracts of private land are located on the north side of the Sweetwater Arm of the reservoir and due east of the dam itself. Portions of the PNWR are located at the extreme southern end of Pathfinder Reservoir, where DeWeese Creek enters the reservoir, a two-section parcel in the northeast corner of T. 28 N., R. 85 W., and the Sweetwater Arm. Created after Pathfinder Reservoir, PNWR is subject to the irrigation needs of the reclamation project.

Landownership around Alcova and Gray Reef reservoirs is a mixture of private, state, BOR-acquired, and BLM-administered. In this part of the study area, 31 private landowners hold approximately 1,220 acres. Most of the parcels are smaller than 5 acres.

The ownership of surface and mineral estates and the acres flooded by the reservoirs are indicated in table 5.

RIGHTS-OF-WAY AND OTHER IMPROVEMENTS

Major utility corridors cross the study area. Power lines emanate from the power generation facilities at Seminoe, Kortes, Alcova, and Gray Reef dams. The larger lines are owned by the Western Area Power Administration. Buried petroleum pipelines from the Sinclair Refinery to Casper run south to north through the study area. Buried long-distance telephone cables cross the study area east to west in the Miracle Mile area.

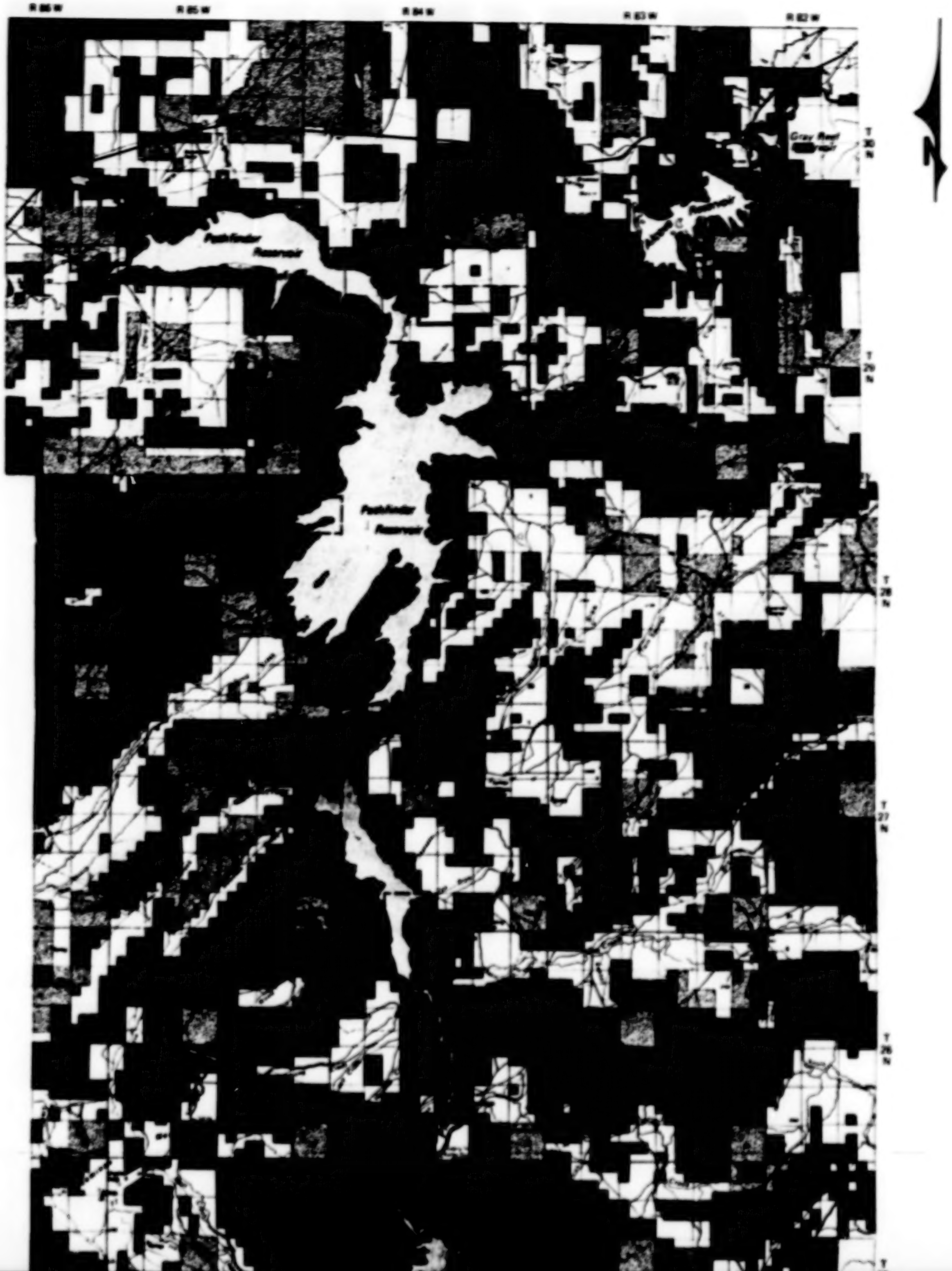
TRANSPORTATION AND ACCESS

Introduction

Both Carbon and Natrona counties are served by a network of railroads, roads, and highways. Federal highways and county roads provide most of the access to the study area. Although other agencies such as BLM, BOR, and WGFD provide access to some points, a large amount of the public land in the study area is inaccessible to the general public.

Public Roads

Several types of roads are found in or near the study area: federal and state highways, county roads, other agency roads (BLM, BOR, WGFD), andprivate roads (see the Transportation and Access map). Interstate 80, which is the main east-west arterial route in south central Wyoming, runs east from Rawlins through Laramie to Cheyenne, where it intersects I-25, the main north-south route between Cheyenne and Casper.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R 84 W
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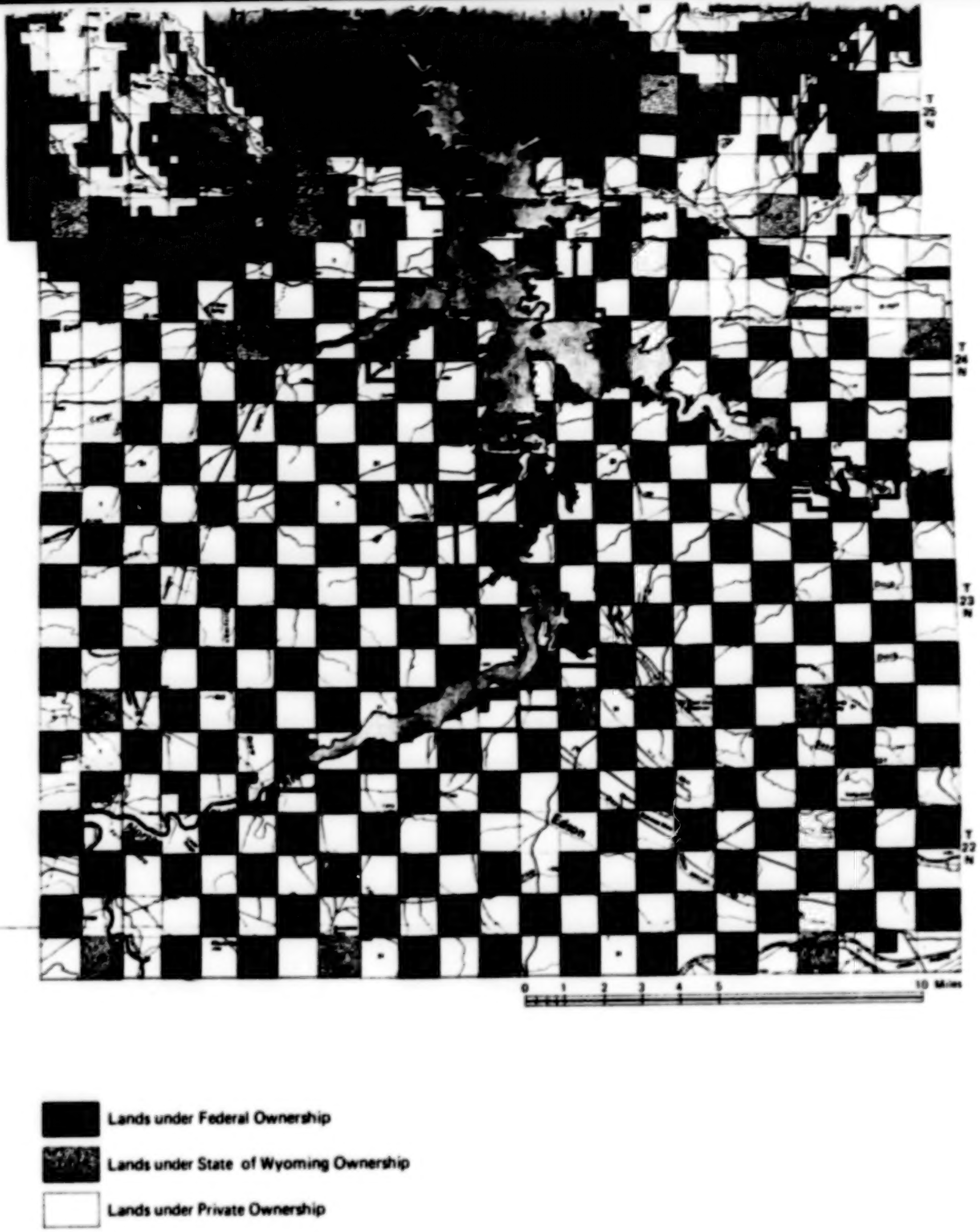
Gray Reef Reservoir
Pathfinder Reservoir
Pathfinder Reservoir
N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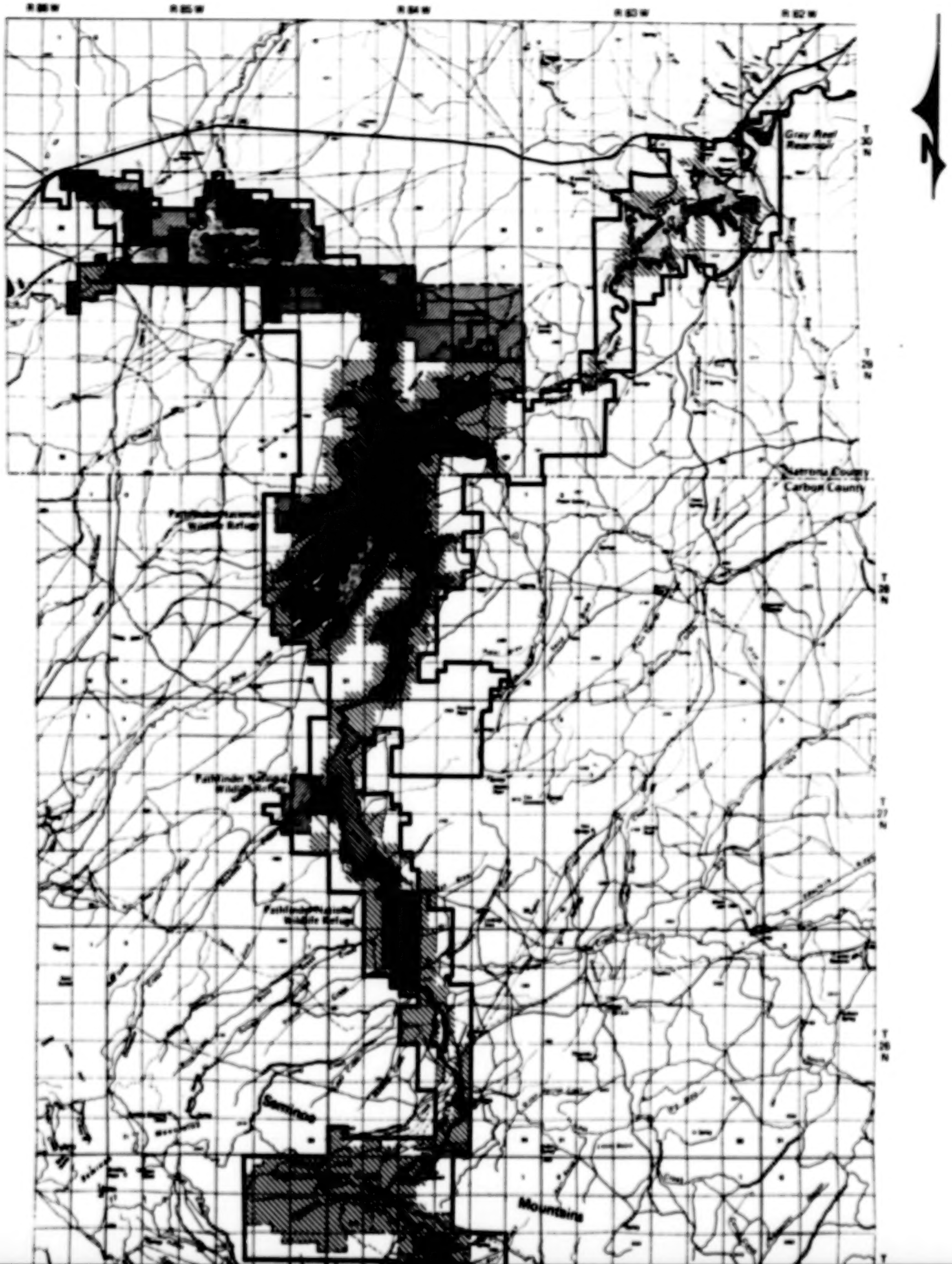
Lands under Federal Ownership
Lands under State of Wyoming Ownership
Lands under Private Ownership

Landownership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R 85 W
R 84 W
R 83 W
R 82 W
Gray Reef Reservoir
T 30 N
T 29 N
Natrona County
Carbon County
Pathfinder National Wildlife Refuge
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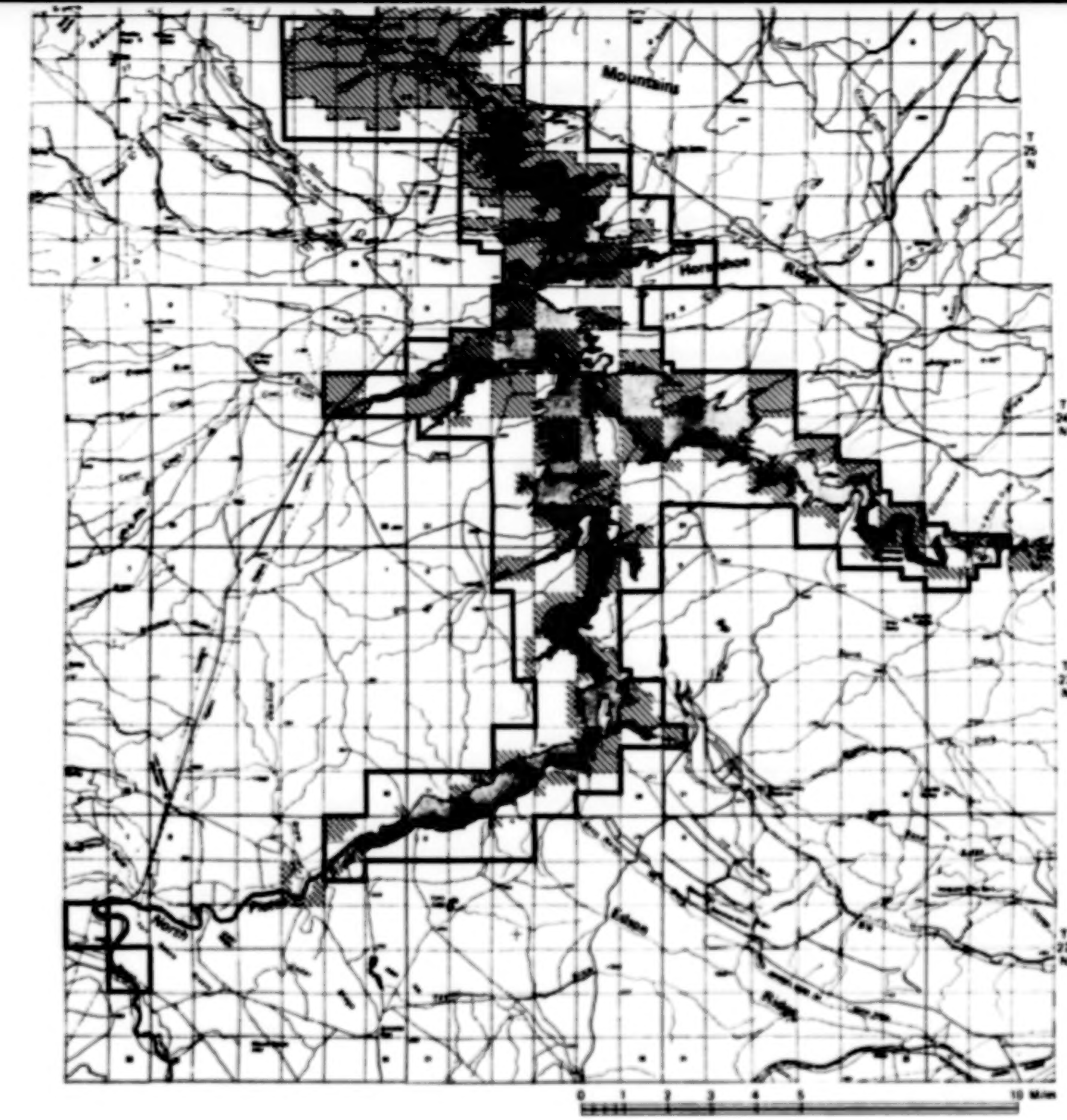
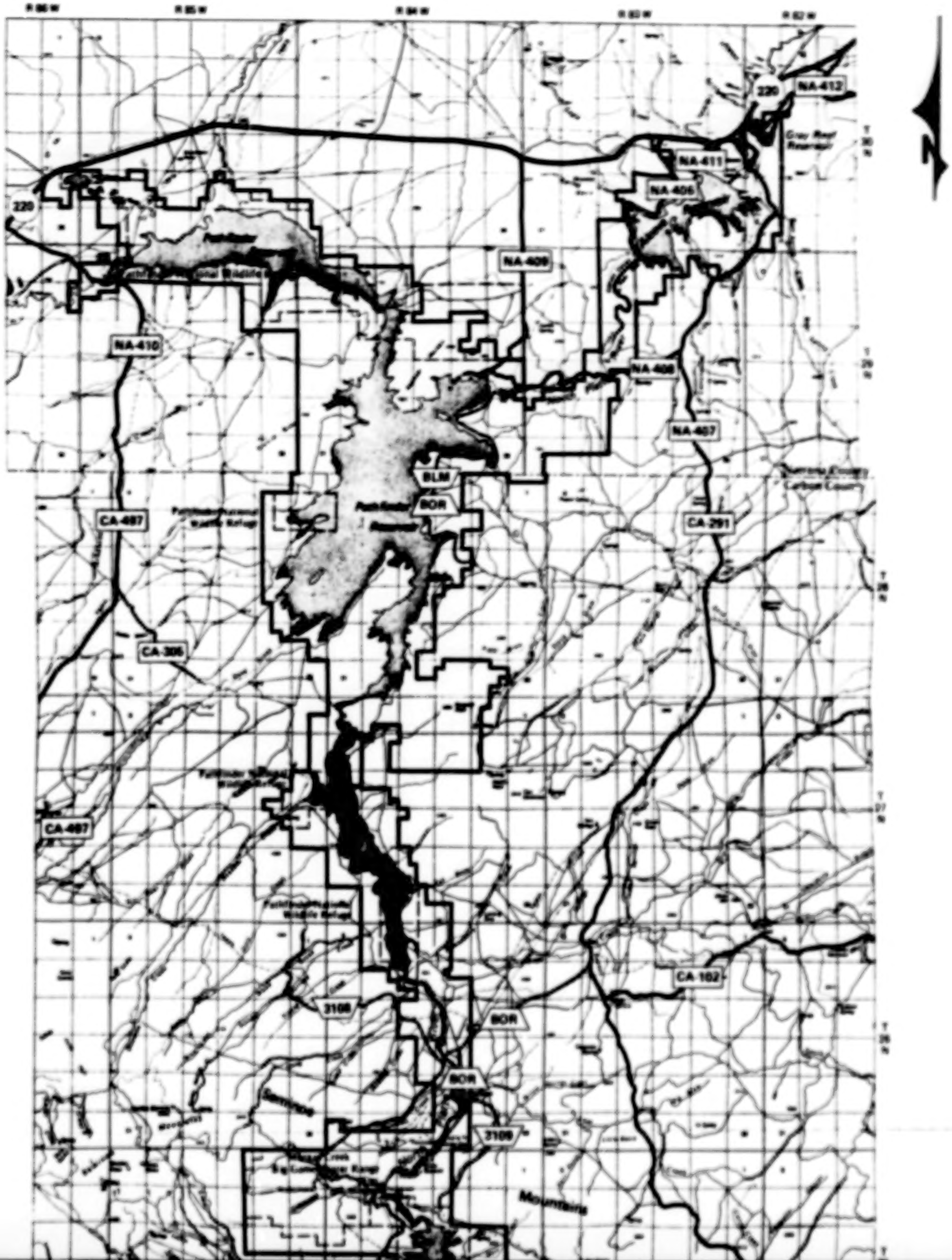
T 27 N
Pathfinder National Wildlife Refuge
T 26 N
Sweetwater
Mountains



▩ U.S. Fish and Wildlife Service

▨ Bureau of Reclamation

Withdrawals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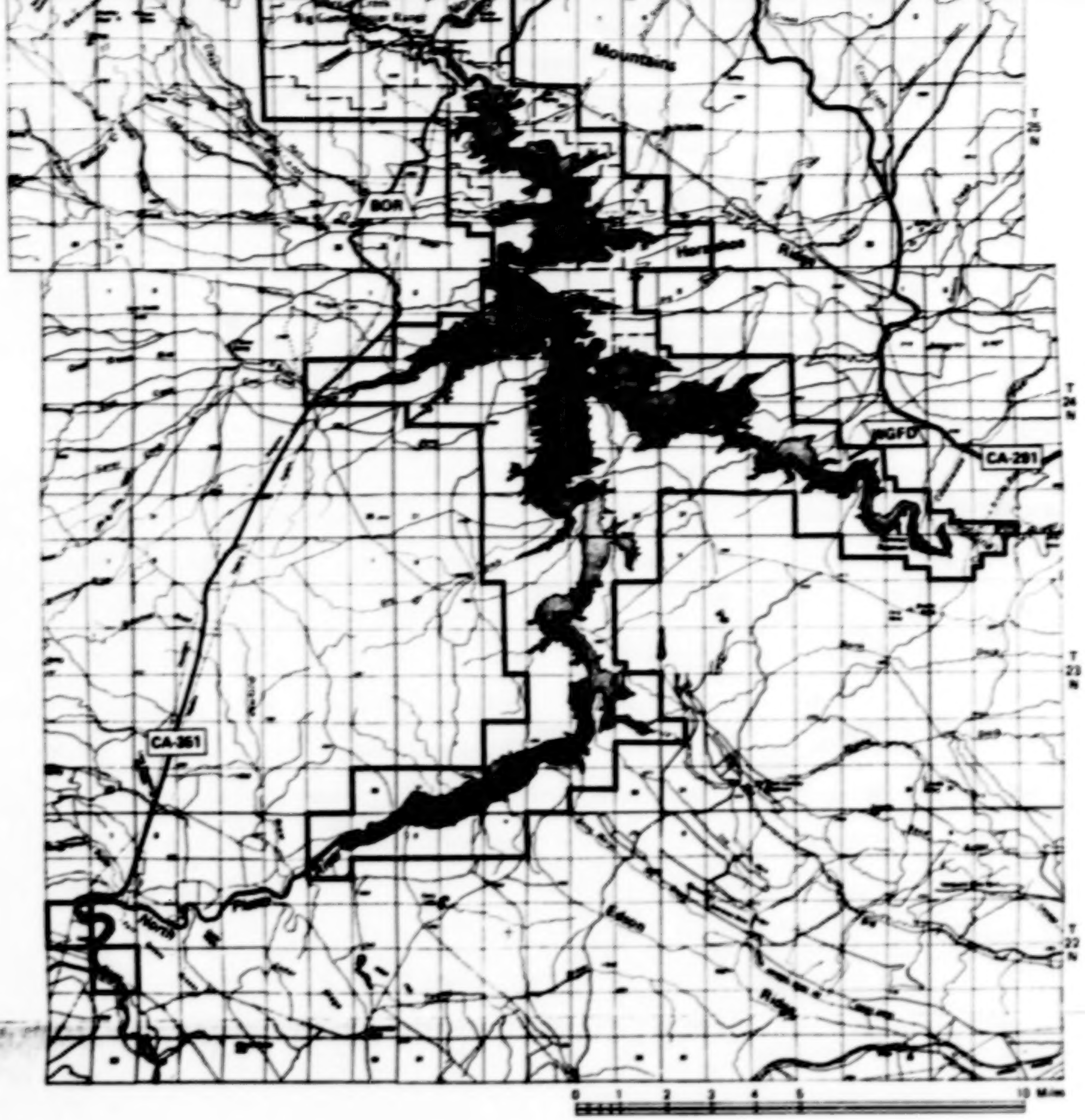


220 State Highway

NA-411 Natrona County Road

CA-291 Carbon County Road

3109 Bureau of Land Management Road

BOR Bureau of Reclamation Road

WGFD Wyoming Game and Fish Department Road

Transportation and Access

From Casper, Wyoming Highway 220 provides access to Natrona County roads leading to Alcova, Pathfinder, and other areas in the northern part of the study area. West of these reservoirs, Wyoming 220 connects with U.S. 287/Wyoming 789, which is the main route between Casper and Rawlins. East of Rawlins, U.S. 30 connects with I-80 and with Carbon County roads to the southeastern part of the study area. Carbon County Road 351 connects with I-80 at Sinclair, providing access to the Seminoe State Park and other county roads in the study area. All these federal and state highways have either concrete or asphalt surfaces. The county roads are maintained by Carbon County in the southern part of the study area and by Natrona County in the northern part. Most of the county roads in the area are graded and drained, with a gravel surface, but some are oiled.

The BLM has four roads in the study area that provide access for the general public. The Moore Road 3108 along the west side of Miracle Mile is graded and drained with a gravel surface; the Bennett Mountain Road and BLM roads 6405.2 and 6405.3 are mostly two-track with no regular maintenance.

The 64 miles leading from Seminoe to Alcova (Carbon County roads 351 and 291 and Natrona County Road 407) have been dedicated as the Seminoe to Alcova Backcountry Byway. Roads so designated by the BLM are open to public use and provide opportunities for off-highway driving. This road, which passes by Seminoe and Pathfinder reservoirs, is paved at each end, but where it passes through the Seminoe Mountains it is gravel surfaced.

The BOR maintains the Seminoe Road from the end of the pavement at Bighorn Ridge (T. 25 N., R. 84 W., section 20) to the intersection with Carbon County 291 just south of Leo. This road provides access to the Morgan Creek area. Approximately 5 miles are paved from Miracle Mile northeast to the end of the road.

The BOR Seminoe Dam Road leads from the Seminoe Road to Seminoe Dam. This road also is used for access to the upper part of Kortes Reservoir. The Sage Creek Road along the east side of Miracle Mile is a BOR road and is maintained from the south end to Sage Creek.

The WGFD has acquired access into the Medicine Bow Arm of Seminoe Reservoir via Austin Creek and maintains the road regularly. The department is negotiating for easements for a road from Leo into The Narrows on Pathfinder Reservoir and to the Pedro Mountains. It is uncertain whether this two-track will be graded, graveled, and drained due to cost considerations.

Accessible Areas

Almost all areas along the shorelines of the reservoirs in the study area are accessible by boat. Legal access for ground vehicles is limited to some 20 different areas.

The Dugway Recreation Site is legally accessible from the Seminoe Road.

At Seminoe Reservoir, North and South Red Hills campgrounds at Seminoe State Park are accessible. Austin Creek Road, managed by the WGFD, provides legal access to the Medicine Bow Arm of Seminoe Reservoir.

Along the beach in the Coal Creek area (checkerboard landownership), the United States holds deeds to lands below elevation 6,358 feet. These lands are legally accessible only from the water. Above that elevation, but below the maximum high water line, there is a flood easement, but it does not allow for public access across the private land.

Kortes Reservoir is accessible to the general public except for areas where access is not authorized by BOR. Although the entire area inundated by Kortes Dam into Seminoe Canyon is on public land, the terrain is too difficult to cross unless one is an experienced hiker or climber. Occasionally people hike into the canyon with a rubber raft and then float-fish the lake.

The Miracle Mile from Kortes Dam to Pathfinder Reservoir is accessible for foot travel, and several points are legally accessible to vehicles. A new bridge has been constructed across the river on the major BOR road.

Pathfinder Reservoir has one legally accessible area, Pathfinder Mountain. Legal public access is available to only about 3 miles of shoreline on the west side of this reservoir.

Most of Alcova and Gray Reef reservoirs are accessible by county road. Major routes are paved.

Areas Where Access Is Limited or Not Authorized

Some areas with legal public access are difficult to travel to or are subject to hazards. Although the BOR road through the Morgan Creek area is legal public access, it is narrow and winding, traversing steep grades. In places the width, grades, and curve radii do not meet minimum road design standards for public roads. These factors combine to make the road a safety hazard for vehicles towing boats or trailers. In addition, the Morgan Creek area is subject to seasonal closures.

The Seminoe Dam Road, also a legal public access route, becomes hazardous during periods of high water and is subject to closure by the BOR. Legal access exists to Sunshine Beach in Seminoe State Park, but when it is wet, this road is suitable only for four-wheel-drive vehicles.

Legal access is available into Pathfinder Mountain. The road is gravel surfaced, but it becomes muddy when wet.

Several areas with no legal public access are being used by the public. Such use of these areas evolved over the years. In some cases, the access may have been implied by the landowner, or the landowner may just be tolerating the public intrusion.

The Seminoe Boat Club was built on private land, and legal access is available only for members and their guests; however, it is widely used by the general public. The Sand Mountain public use area is on public land adjacentto the boat club, but there is no legal public access to the area. As of January 23, 1990, no easement had been recorded in Carbon County.

No legal vehicle access is available to Coal Creek Bay and the shoreline northeast of it, on the northwestern shoreline of Seminoe Reservoir. People trespass across private lands to reach this area, which is on private land and public land.

Physical, but not legal, access is available in the vicinity of the Austin Creek inflow, an area about 1 mile north of the WGFD fishing access on the Medicine Bow Arm of Seminoe.

Legal access is not available to the Carson Place or to Dry Ditch Point, popular areas for walleye fishing in the southern portion of Seminoe. Dry Ditch Point is on federal land, but physical access is by trespass over private lands.

Along the western shoreline at the southern end of Seminoe Reservoir, multiple trails have developed through uncontrolled use of vehicles, including ORVs. These uses constitute trespass on private lands and have caused soil erosion and loss of vegetation.

Many people use "Pathfinder Crossing" to reach public land on the northeastern side of Pathfinder. At present there is no legal public access to "Pathfinder Crossing" from Natrona County Road 408 (the Fremont Canyon Road). Vehicles can be driven across the North Platte River at this low-water crossing about 1/2 mile downstream from the Pathfinder Dam spillway. However, the crossing does not provide reliable access because vehicles can cross the river only during periods of low water releases from the dam. The BLM has obtained two of three needed road easements for this crossing, and the BOR holds a permit from the Army Corps of Engineers allowing for construction of a crossing.

Bishop Point is another area that is being used by the public without legal public access. Natrona County has constructed a road and maintains it, but there is no formal easement for the road.

Physical access is available over existing two-track roads from Natrona County Road 410 (Buzzard Road) to Sand Creek Point, a popular fishing spot on the western shoreline of Pathfinder. However, legal access over these roads is not available.

RECREATION

Introduction

The potential for recreational use of the reservoirs and connecting reaches of the North Platte River was recognized almost immediately with the completion of the dams. The present complex of recreational developments and uses along the reservoir system is the result of a long evolutionary process dating back to the completion of the first major project. Recreation facilities are shown on the Existing Facilities map.

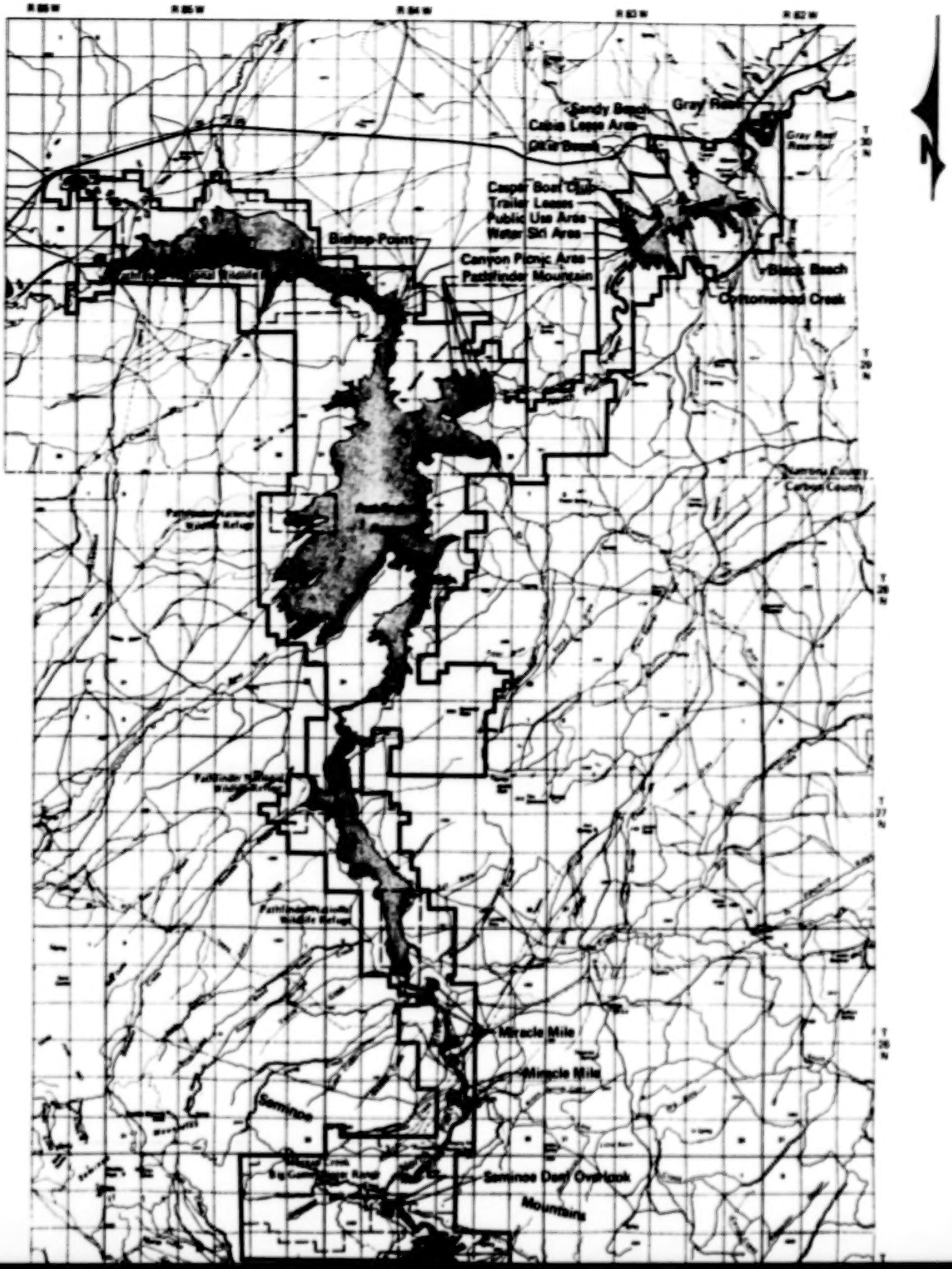
The Dugway

At the southern end of the study area, upstream of Seminoe Reservoir, is BLM's Dugway site, which includes a stretch of the North Platte River that is still free-flowing. This area is not attached to the general study area; it is separated by 4 miles of land of mixed ownerships. The Dugway is a popular take-out point for boaters who have launched upstream.

Facilities available at the Dugway are four gravel boat launch areas, six picnic tables, and a single unit vault toilet. A water well has been drilled, but it is not equipped with a pump because of design and water quality considerations.

Most fishing in this area is done by casting from shore or by wading and casting. It is possible to float-fish the Dugway reach by launching at the upper Dugway site and taking out at the lower Dugway site. The existing gravel boat launches are important take-out points for anglers using the upstream float fishery.

The WGFD had intended to install a concrete ramp at one of the Dugway launch sites, but engineering problems and cultural resource sites may delay or preclude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Trailer Leases
Public Use Area
Water Ski Area
Bishop Point
Canyon Picnic Area
Pathfinder Mountain
Black Beach
Cottonwood Creek
Pathfinder National Wildlife Refuge
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Carbon County
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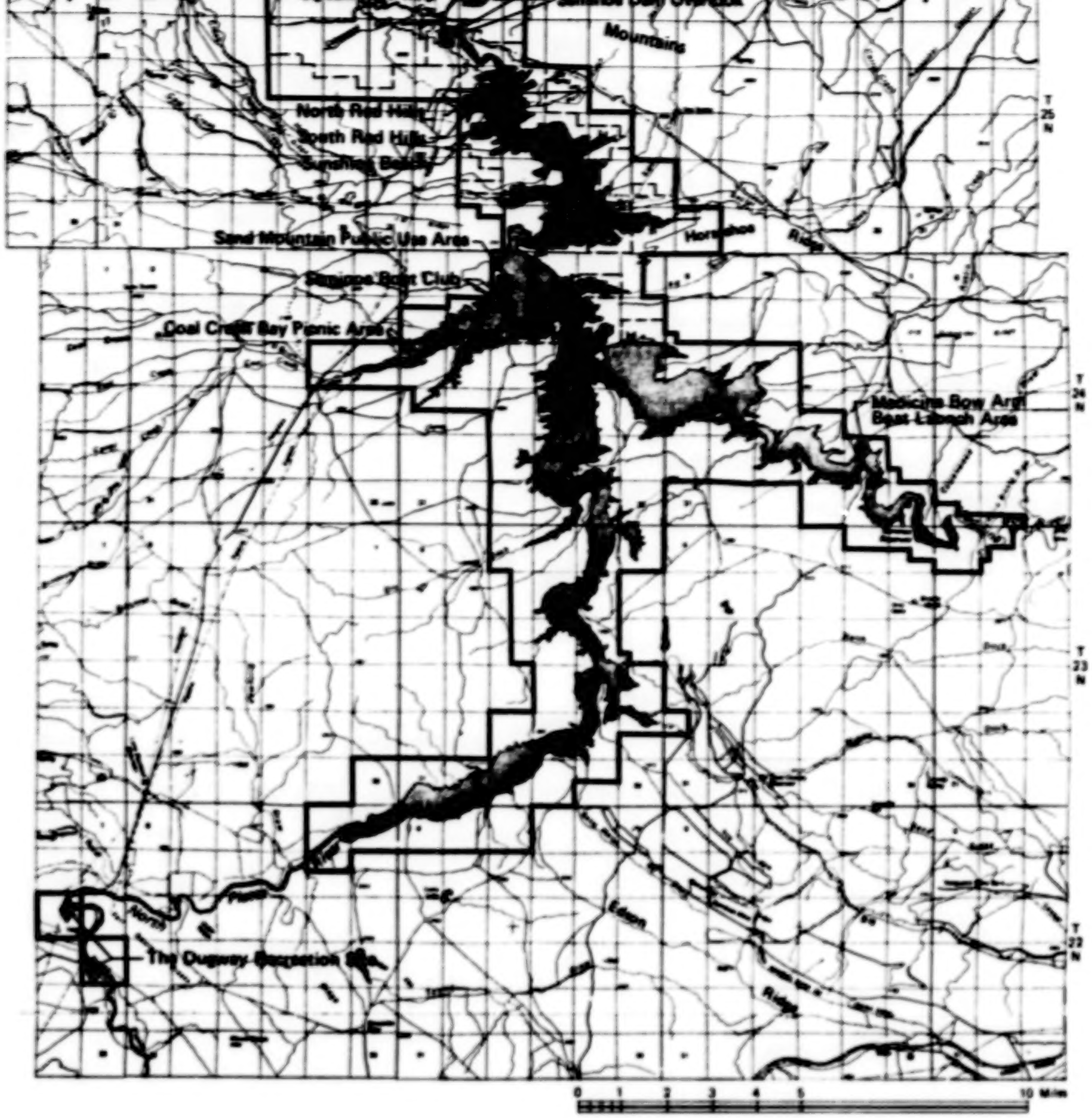
Seminoe Dam Overlook
Mountains



▲ County Park Site

● Wyoming Game and Fish Site

■ State Park Site

● Private Site

◆ BLM Site

▲ Site with NO Managing Agency

Existing Recreation Facilities

this project. The Dugway eventually could be important as a put-in point for float fishing between the Dugway and Seminoe Reservoir if a suitable take-out point could be developed near the Carson place.

The Dugway is being used by increasing numbers of anglers from Wyoming and other states. In the past ten years, angler use of this area has increased noticeably, but no reliable estimates of current use are available.

Seminoe Reservoir

Features and Facilities

Seminoe Reservoir has more than 180 miles of shoreline when at total capacity. Seminoe is a popular boating and fishing area for Rawlins area residents, who use the reservoir year-round. Developed recreation facilities are operated by the DPHS (Seminoe State Park), the Seminoe Boat Club, and the WGFD (Medicine Bow Arm).

Along with the North Platte River, Seminoe offers the most important water-based recreation opportunity in south central Wyoming. Most of the visitors are from the local area, but Seminoe State Park is growing in popularity with recreationists from adjacent states, especially Colorado.

The following factors affect the degree of development and use levels at Seminoe:

Much of the reservoir is located in the checkerboard landownership area, so that public access to the shoreline is severely limited.

The water level in the reservoir fluctuates widely, and few low-water boat ramps are available.

Strong winds in the area can be hazardous.

There are few developed public facilities.

At present all the developed public recreation facilities at Seminoe are located in four separate areas of Seminoe State Park: North Red Hills, South Red Hills, Sunshine Beach, and Sand Mountain day use area. Ninety-four camp spaces are available, each equipped with a table and fire grille. Of these, 76 are trailer sites, designed for smaller units and not well-suited for larger recreational vehicles (RVs), and 18 are picnic shelters. Drinking water

Seminoe Reservoir, Seminoe State Park.

and vault toilets are available. There are two high-water and one low-water boat ramps in the park. There are no stores in Seminoe State Park, nor is there gasoline for sale.

The Seminoe Boat Club consists of private land upon which are placed privately owned mobile homes used for vacation residences. Groceries, fishing tackle, gasoline, and other supplies are available at the Seminoe Boat Club. Both a high-water and a low-water boat ramp owned by the Seminoe Boat Club can be used by the public for a fee.

No formal developed recreation sites or boat ramps are available in the Seminoe area except those in Seminoe State Park and at the boat club, and at the Medicine Bow Arm. The BOR had placed picnic tables on public land at Coal Creek Bay, which consists of both private and public lands, although no legal access is available. These tables were not used much because they are in an undesirable location—on a ridge that is often windy. As a result, the BOR recently removed about two-thirds of the tables, leaving about 17 in the area. However, recreational use occurs in several other areas, such as Carson Place and Dry Ditch Point on federal land, and several small coves and bays to which road access, if not legal access, is available. On the Medicine Bow Arm, fishing access, a boat ramp, and a vault toilet are managed by the WGFD.

Visitation

The primary attractions of Seminoe Reservoir are fishing, boating, and other water sports. The popularity of Seminoe has increased in recent years relative to the other reservoirs in the study area, mainly because the quality of fishing has become known. Other recreational activities at Seminoe include camping, wind surfing, picnicking, sightseeing, beach parties, the boat club, and hiking.

Reliable visitation data are available only for Seminoe State Park; virtually nothing is available for the remaining Seminoe areas. Approximately 65% of the users of Seminoe State Park come from Wyoming; the remaining 35% come from other states, especially Colorado.

The average length of a visit to the state park is four days (Brownell 1990). Nonresidents tend to concentrate in the state park and use the developed facilities. Wyoming residents more often come for a day or a weekend, primarily using the reservoir and boat launch facilities. Highly developed facilities are not as high a priority for these users as access to the reservoir.

A much larger percentage of the users of areas outside Seminoe State Park may originate from the local area. Visitation is expected to increase somewhat as Seminoe's reputation as a quality fishery becomes more widespread. Resident use probably will depend on local population trends as much as any other factor.

Boat Ramp at Medicine Bow Arm, Seminoe Reservoir.

Existing Problems and Conflicts

A major problem at Seminoe Reservoir is a lack of public access. There are few developed roads or public rights-of-way to the public lands along the shoreline of the reservoir. As a result, there are multiple trails that visitors use in attempts to reach the reservoir.

Most of this use occurs because visitors want to get to public use areas for fishing and other activities along the shoreline. Uncontrolled vehicle use and ORV use is a problem on lands adjacent to the west side of Seminoe Reservoir in the checkerboard landownership area. Many roads and uncontrolled ORV use have resulted in soil erosion, damage to native vegetation, and proliferation of trails. Since no public access has existed to the east shore, there are no major ORV problems on that side.

The high winds and the high potential for summer thunderstorms to occur with little warning can create hazards for boating. The lack of facilities for visitors is another problem. There is particularly a need for low-water boat ramps.

The Miracle Mile and Kortes Reservoir

Features and Facilities

The short stretch of river between Kortes Dam and Pathfinder Reservoir known as Miracle Mile ranges between 4.5 and 11 miles in length, depending on the water level of Pathfinder Reservoir.

By the early to mid-1950s, the Miracle Mile had achieved a reputation as a quality trout fishery and attracted a great deal of use, both from Casper and Rawlins, and within the Rocky Mountain region. The local population has developed a strong sense of ownership of the Miracle Mile, which has a long history of being a popular destination for local anglers.

The following factors contribute to the popularity and use of the Miracle Mile:

The quality of the fishery is high; a minimum flow of 500 cfs is maintained.

The scenic quality is high.

The area is accessible from well-maintained public roads.

Developed recreation facilities are available on public lands.

Travel time to local communities is reasonably short.

The Miracle Mile remains ice-free in most years.

A total of 43 developed camp and picnic sites are available in eight separate locations on both sides of the river in the Miracle Mile area. Graveled access roads lead to the sites, which offer fire rings, picnic tables, and 15 vault toilets (USDI, BOR 1983a). Firewood is not provided at the sites, and trash collection from the sites is not currently being performed.

The WGFD maintains the developed facilities. A store on private land near the Miracle Mile sells provisions and fishing tackle; this business also offers bed and breakfast and rents cabins.

Camp and Picnic Sites at the Miracle Mile.

Visitation

Most of the recreational use at the Miracle Mile involves fishing. Although most visitation occurs in summer, the fishing season is nearly year-round because the river usually is ice-free. Other recreational facilities include hunting, camping, sightseeing, and picnicking, but fishing remains the primary attraction.

Information provided by the BOR in the 1970s indicated that approximately 80% of the Miracle Mile users were from other states. Nonresident use had dropped off considerably in 1982, when approximately 64% of the users were nonresidents.

Recreational use of Kortes Reservoir is limited to occasional anglers who obtain access to the reservoir from the Seminoe Dam Road. Recreational activities have not been encouraged at Kortes Reservoir because of rugged terrain.

Existing Problems and Conflicts

Because the river in the Miracle Mile is narrow and in an arid area, use tends to be concentrated in or adjacent to the riparian zone. Recreational uses, livestock grazing, and wildlife, which all concentrate in this narrow area, have led to problems such as loss of riverbank vegetation and erosion. The Coordinating Committee (led by the Medicine Bow Conservation District), is working on solutions to those problems in coordination with the BLM, the BOR, the WGFD, and involved ranchers.

Because firewood is not available or provided at the campsites, visitors have damaged cottonwood trees in their attempts to use them as a firewood source. Litter also has been a problem in the area: there is no garbage collection, and some visitors have not hauled out their garbage.

Kortes Reservoir is in a canyon, so cliffs and extremely rugged terrain make it inaccessible by foot. Boaters can enter the south end of the reservoir from Seminoe Dam Road, but launching boats anywhere on Kortes Reservoir

Livestock and Camp Site at the Miracle Mile.

is extremely difficult. No facilities exist at Kortes Reservoir, although there was a boat ramp which once allowed limited boat access. Use is no longer allowed because it does not meet safety standards.

Pathfinder Reservoir

Features and Facilities

Pathfinder Reservoir has approximately 117 miles of shoreline when at total capacity. Although the reservoir has been in existence for more than 80 years, it is characterized by a lack of recreational development.

Recreationists use Pathfinder in two ways: some are dispersed along the shoreline; others use the developed campgrounds and marina. Shoreline fishing has been a very popular activity for Casper residents in past years,but more recently access through private lands has been limited, so that shoreline fishing has decreased. The large expanses of beaches and public lands along the west shoreline of Pathfinder Reservoir are largely unused but provide excellent opportunities for day use and primitive camping.

People who enjoy Pathfinder mention low levels of visitation and lack of conflicts with other recreational users as reasons they choose to go there rather than to other reservoirs in the region.

A number of factors affect the degree of development and use levels at Pathfinder. Some are listed below.

The location is farther from Casper than Alcova.

The water level in the reservoir fluctuates widely.

Strong winds in the area create hazardous conditions for boats.

Access to more than 90% of the shoreline is limited. Many of the roads providing physical access are considered suitable only for four-wheel drive.

There are few developed public facilities.

Developed recreation facilities are concentrated at two locations near the north end of Pathfinder Reservoir: Bishop Point and Pathfinder Mountain. Picnic shelters at those two areas, each with a firebox and trash cans, serve as sites for both picnicking and camping. There are no rooms or cabins to rent.

The Pathfinder Mountain area, which is near the dam, has two picnic areas with a total of 24 shelters, two boat ramps, and parking areas. The access roads are gravel surfaced. The boat ramps consist of a nonconnecting, extended high-water ramp and a low-water ramp, which is usable when the reservoir is at very low levels. During periods of peak demand, it is not uncommon for visitors to wait one or two hours before getting to launch their boats at the ramps.

The Bishop Point facilities consist of a campground containing 15 shelters available for either camping or picnicking, parking areas, and a boat ramp. Unlike the ramp at Pathfinder Mountain, the one at Bishop Point is usable only at high water levels. Vault toilets are available at both sites, but potable water is available only at the marina at Pathfinder Mountain.

At high water in Pathfinder, it is possible to launch small boats (with or without trailers) near the Chalk Bluffs at the lower end of the Miracle Mile even though there is no developed boat launch, nor is there an improved road to this area. Larger boats cannot be launched safely at any of the undeveloped launch areas. At low water, there are even fewer possibilities for launch of small boats at the south end of the reservoir.

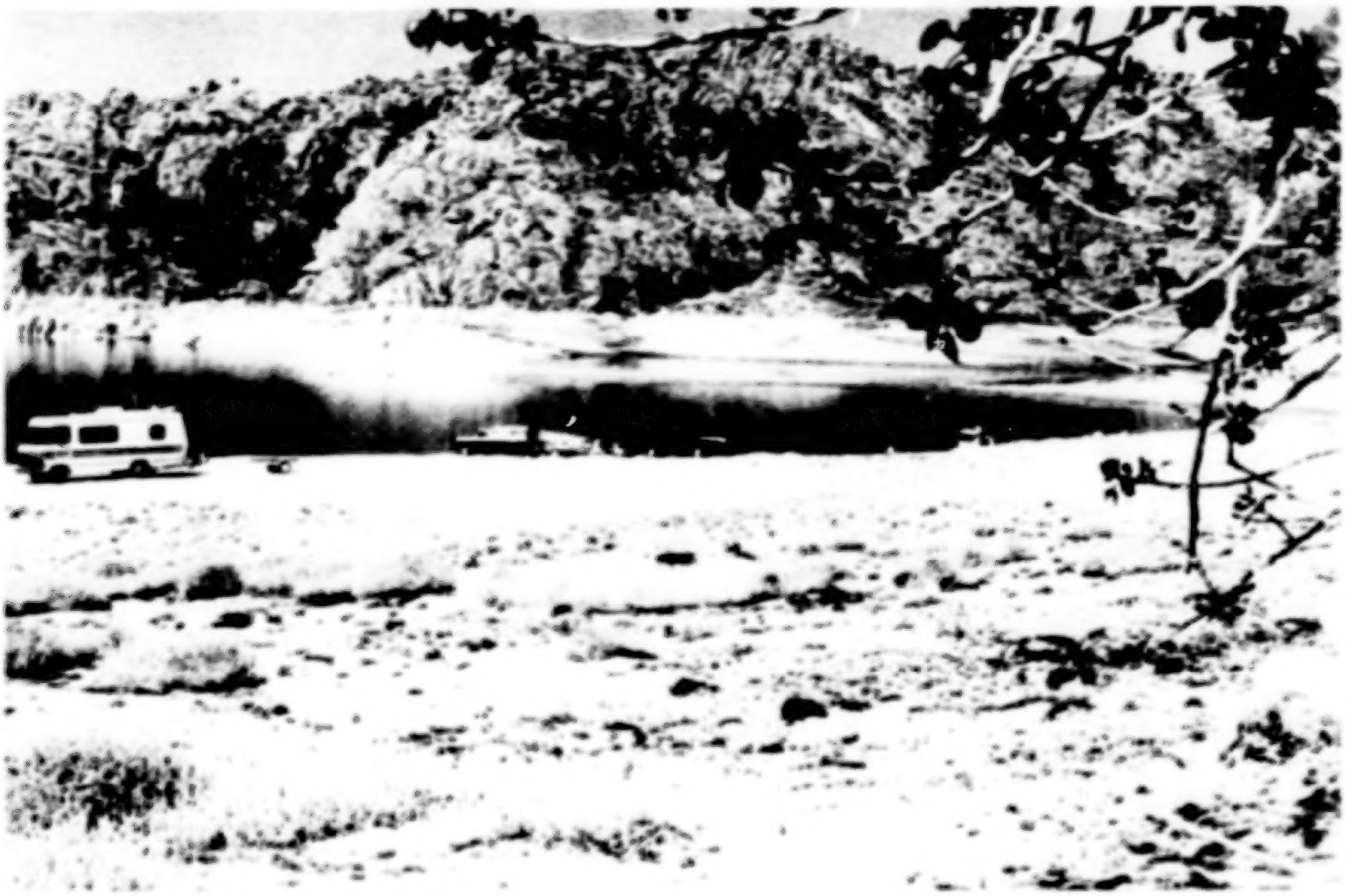
Present management provides for a marina concession. The Pathfinder marina, which has been managed under a license agreement between NCPPG and a private licensee, is closed at this time. Under the terms of the license, the marina is to provide a boat dock and ramp and to offer for sale such items as groceries, baits, sporting goods, and gasoline. The boat dock may be left ondry ground during periods of low water. Wide fluctuations in the water level at Pathfinder have made successful establishment of a private marina difficult.

Visitation

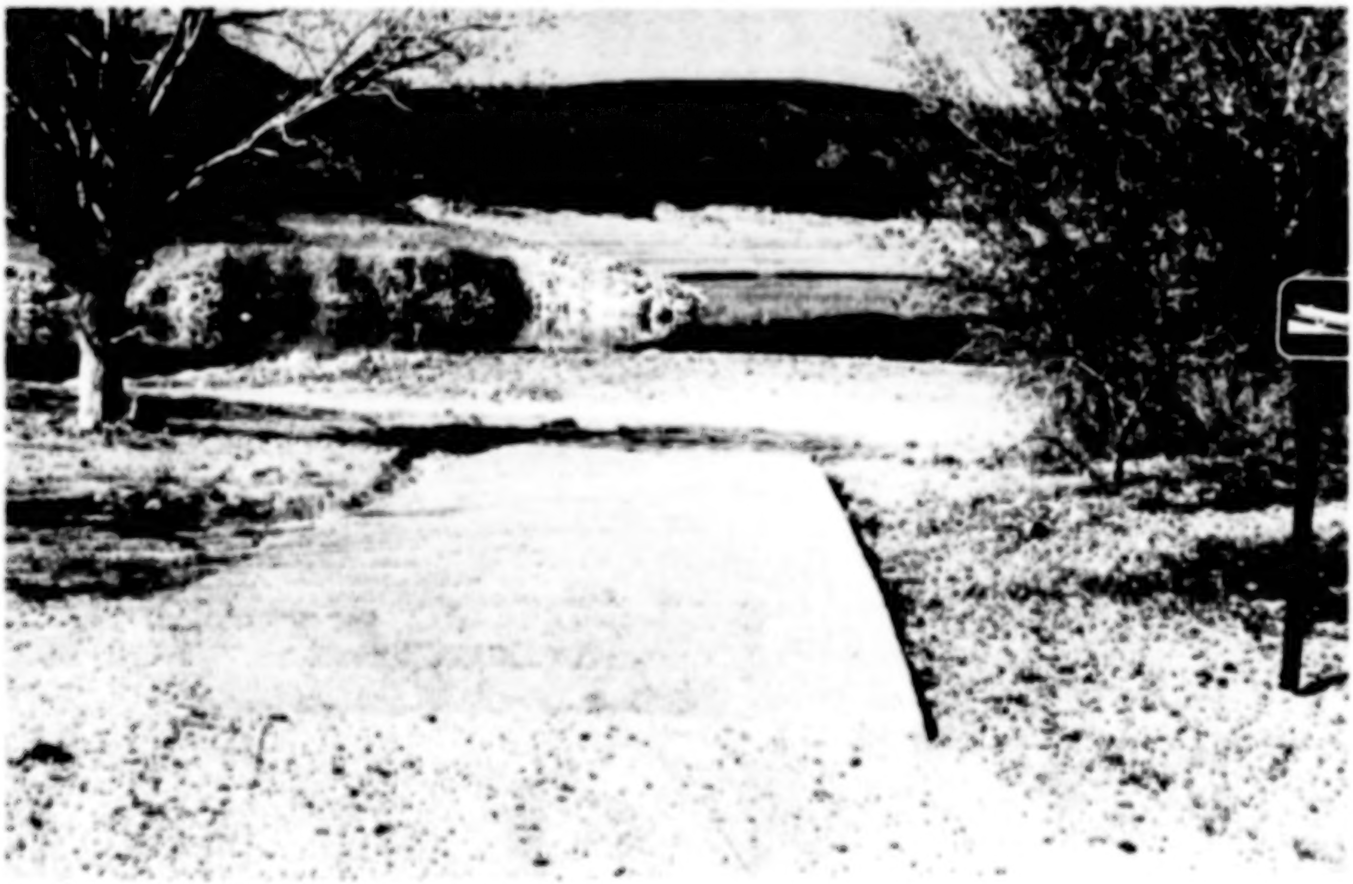
Most of the recreational use of Pathfinder is related to boating and fishing opportunities. Because of limited access, most fishing is from boats, although bank fishing has enjoyed great popularity in past years. Other activities at Pathfinder include wind surfing, sailing, ice fishing, and camping. Many people who find Alcova too crowded for their tastes come to Pathfinder. Pathfinder offers uncrowded beaches and a low number of boaters for those who prefer more solitude in their recreational outings.

Included with Pathfinder is recreational use of Fremont Canyon. Near the Fremont Canyon Bridge is a well-known rock climbing area that attracts top level rock climbers from all over the world.

Another noteworthy recreational activity in the area is a segment of the Casper Classic bicycle race. The route used for the bicycle race provides challenging terrain, low vehicle traffic volumes, quality scenery, and a good hard-surfaced road.



Pathfinder Mountain - Natrona County Park.



Boat Ramp at Bishop Point - Pathfinder Reservoir.

Fremont Canyon below Pathfinder Dam.

More than 80% of visitation is to the two developed recreation areas at Pathfinder: Bishop Point and Pathfinder Mountain. Most visitors to Pathfinder come from Natrona County; a modest percentage of the total use is by people from other parts of Wyoming and from neighboring states.

There have been no recent projections of future visitation at Pathfinder. Since this is primarily a local recreation area, future visitation will increase or decrease along with the local population. Nonresident use probably will increase by modest amounts in future years. The major factor that could affect visitation is the degree to which public access is provided to the reservoir and the quality of the fishing. The presence of camping and launch facilities could influence visitation.

Existing Problems and Conflicts

The use of ORVs could become a problem in the Pathfinder area. The public lands surrounding Pathfinder Reservoir and the reservoir lands themselves are classified as limited use areas, which means that ORV use is limited to the existing road and vehicle route network. The limitations were established by the respective land use plans of the BOR and the BLM.

These designations have not been fully implemented. Improved roads that exist near the dam and Bishop Point tend to contain traffic in developed areas. Elsewhere, lack of enforcement has enabled traffic to go where the recreationist desires except where limited by "no trespassing" signs. When the water level is low, a large area below the high-water mark becomes available. This area is free of vegetation, and vehicles tend to roam around at will.

Unmanaged vehicle use has the potential to create problems such as the continuing growth of new vehicle ways and conflicts with other uses. Some potential problems from vehicle use are disturbance of livestock, wildlife, vegetation, soils, and cultural resources. Visual impacts also are apossibility. Additional concerns result from exposed land areas during low-water years when areas normally under water become available to ORV use.

Legal access and trespass also are sources of conflict in the Pathfinder area. Developed public roads provide public access to only about 3 miles of shoreline near the dam and at Bishop Point (near the beginning of the Sweetwater Arm of the reservoir). Lack of access has concentrated public use in these two areas.

From time to time over the past 25 years, Casper anglers and other recreationists have tried to get the BOR or the Natrona County Road and Bridge Department to build a bridge over the river just below Pathfinder Dam. This would provide legal public access to the eastern shore of the reservoir. Funding for the project has not been available.

Visitor safety is another concern at Pathfinder, which is known as a dangerous reservoir for boating because strong winds frequently move in quickly, creating huge waves. Boats have been swamped and people have died from drowning and hypothermia.

The boat launch areas at Pathfinder are on the north and northeast end of the reservoir. Much of the better fishing is near the south central part of the reservoir, but there are no boat launch facilities at the south end. When strong winds arise it is necessary to travel back through the rough water to get to the boat launch area.

Alcova and Gray Reef Reservoirs

Features and Facilities

Alcova Reservoir, the nearest large body of water to the city of Casper, has become a major recreation area for Casper residents. The reservoir has approximately 24 miles of shoreline when at total capacity. A number of factors led to Alcova's becoming the most heavily developed of the reservoirs. The following are the most important factors.

It is near Casper, one of Wyoming's major population centers.

The water level is constant through the summer.

The area is highly scenic.

There is good legal public access from Highway 220 via Lakeshore Drive and Natrona County Road 407 (the Kortes Road).

River Crossing below Pathfinder Dam.

Surrounding public and private lands do not support uses that cause major conflicts with recreational uses and development.

NCPPG issues leases for cabin sites, mobile home spaces, boat and water ski clubs, and the marina.

Public use facilities have been constructed by the federal government and public beaches have been enhanced.

Public/private partnership has been effective in working toward development, management, and maintenance of Alcova recreation area.

Recreational facilities have been developed at Gray Reef to provide for fishing, float boating, camping, and picnicking. The water level of Gray Reef Reservoir fluctuates greatly on a daily basis, resulting in limited recreational opportunities on that reservoir. Gray Reef Reservoir provides 12 picnic sites, 6 campsites, and 1 canoe portage. These public use facilities are operated by NCPPG.

Six public use areas at Alcova Reservoir—Sandy Beach, Okie Beach, Public Use Area "D," Canyon Picnic Area, Cottonwood Creek, and Black Beach—provide a total of 23 campsites, 150 picnic sites, and 8 boat ramps. The BOR plan proposes three more public use sites on the east and south side of the reservoir.

A fee is required for overnight camping at the public camp areas but not for day use. The picnic shelters at Black Beach and Cottonwood Creek can be reserved for a fee.

In addition to the public use areas, management provides for a marina concession, a water ski club (100 families), a boat club (234 active members and 20 courtesy members), a trailer court (158 sites), and seasonal cabins (100 lots). The contract agreement between the BOR and NCPPG provides for the administration and development of these areas. The current licenses between NCPPG and the private licenses for all these areas will expire in 1991.

The Alcova Lakeside Marina, managed under a license agreement between the NCPPG and a private licensee, comprises about 4 acres. The marina offers boat rentals, 150 dock slips, storage space, and campsites. The license also provides for operation of a restaurant and the sale of gasoline, groceries, liquor, baits, and sporting goods.

Alcova Reservoir - Alcova Boat Club on the Right, Ski Club on the left, Trailers and Marina in center.

Alcova Trailer Court.

Alcova Cabin Sites.

The Casper Boat Club has a club site license with NCPPG for approximately 11 acres on the west side of the reservoir, and provides a clubhouse with restaurant facilities and boat docks for its members.

The Casper Water Ski Club has a club site license with NCPPG for approximately 11 acres located on the west side of the reservoir. The ski club provides a clubhouse with restaurant facilities, 100 boat docks, and 100 camper spaces.

The Alcova Trailer Court, which is operated by NCPPG, occupies approximately 15 acres on the west side of the reservoir. The trailer court has 158 trailer spaces. The court offers paved streets, curbs, electrical and sewage hookups, showers, and flush toilets.

The Alcova cabin area is also operated by NCPPG and occupies approximately 125 acres on the north side of the reservoir. The area contains 100 cabin sites and includes unpaved roads, electrical hookups, septic tanks, and groundwater wells. The county rents sites to cabin owners for recreational purposes. Occupancy is limited to six months each calendar year. Any improvement or remodeling of existing cabins must not cause the total enclosed ground floor area to exceed 800 square feet, including the existing structure. Each cabin owner is authorized to construct a dock facility that measures 4 feet by 30 feet and does not occupy more than 24 feet of shoreline. The shoreline must remain open to the public at all times.

In addition to the recreation facilities, NCPPG operates a sewage lagoon and a landfill. The landfill serves the entire area; the sewage lagoon serves the trailer court, the boat and water ski clubs, and the marina. All revenues collected by NCPPG from administration of the public and private facilities described above are required to be used for management and maintenance of the public facilities at Alcova Reservoir.

Some Casper residents have made a major commitment in the Alcova area through development of the boat and water ski clubs, the marina, the trailer park, the private cabin area, and a private home area on adjacent private land. Virtually all the private leases and trailer park leases at Alcova are held by local people. Some local residents, or their families, have held leases on the same location in the Alcova area since leases first became available.

Visitation

Recreational use by visitors in the Alcova/Gray Reef area varies from day use to summer-long use of cabins, the mobile home park, and vacation homes. Since it is but a half-hour drive from Casper, residents of that town find it very convenient to go there even for half a day. Day use involves several activities, including fishing on the river between Gray Reef and Alcova, boating, lake fishing, picnicking, beach parties, wind surfing, water skiing, pleasure driving, hiking, school field trips and nature study, ice fishing, and swimming.

Most camping occurs on weekends at the camp areas managed by NCPPG. Camping accounts for some long-term use of a week or more, but this is a minor part of total recreational use. Much of the long-term and overnight use is associated with the summer cabin area, the boat and water ski clubs, the county-operated mobile home park, and the adjacent private home area.

It is estimated that more than 85% of visitation to Alcova and Gray Reef reservoirs originates within a 50-mile radius. There are two major categories of recreational users: those who use the area through a private lease arrangement with NCPPG and members of the general public, who use NCPPG-managed recreation facilities such as Sandy Beach.

The recreation facilities at Alcova and Gray Reef reservoirs are the most intensive and the most diverse in the study area. Recreational users are well organized, and they express strong opinions about management.

Existing Problems and Conflicts

The Alcova and Gray Reef recreation area is heavily developed. The existing mix of private and public recreational facilities meets the needs of the local population. The prevailing local attitude seems to be that NCPPG does a good job. The only concern is that there may not be adequate local funding to keep the developed public recreation facilities in excellent condition.

LIVESTOCK GRAZING MANAGEMENT

Parts or all of 22 grazing allotments are in the study area. Information about these allotments is summarized in table 6.

The 22 allotments cover a total of approximately 355,000 acres of public land, but only 73,800 acres, or approximately 21% of the total acreage of public land in those allotments, lies within the study area. BLM-administered public land within each of these 22 grazing allotments ranges from 1,100 acres to 86,600 acres, with the average at about 16,100 acres.

The 22 allotments account for approximately 53,800 animal unit months (AUMs) of active preference. Active grazing preference, expressed in AUMs, is the total

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TABLE 6

GRAZING ALLOTMENTS WITHIN THE STUDY AREA BOUNDARY

		Acres of Public Lands Within Each Grazing Allotment			AUMs on Public Land Within Each Grazing Allotment	
Number	**Name**	**Total Allotment (acreage)**	**Approximate Portion of Allotment Within Study Area (acreage)**	**Percentage of Allotment Within Study Area**	**Total Allotment (AUMs)**	**Approximate Number of AUMs Within Study Area**
10043	Alcova	28,765	5,410	18.8	3,229	607
00323	Black Canyon	14,355	6,420	44.7	2,106	941
10201	Buzzard	56,200	5,920	10.5	12,357	1,297
00807	East Schneider Ridge	10,206	440	4.3	1,263	54
00805	East Seminoe	1,906	880	46.2	168	78
10088	Granite Ridge	6,404	6,404	100.0	982	982
00803	Horseshoe Ridge	4,358	1,200	27.5	369	102
10209	Junk Creek	11,499	2,232	19.4	2,095	406
00320	Leo	11,448	2,000	17.5	2,731	478
00302	Little Canyon Creek	1,424	160	11.2	165	19
10212	Long Creek	6,987	520	7.4	1,453	108
00819	North Walcott	32,423	2,760	8.5	3,138	267
00301	Pathfinder (Carbon Co.)	12,036	7,110	59.1	1,506	890
10063	Pathfinder (Natrona Co.)	25,495	11,651	45.7	4,234	1,935
00820	Quealey Block	26,748	6,160	23.0	3,848	885
10218	Seminoe/D.O.	86,573	8,760	10.1	11,066	1,118
00804	South Austin Creek	1,848	740	40.0	260	104
00333	South Bennett (No.)	4,525	1,000	22.1	772	171
00801	South Bennett (So.)	2,380	1,280	53.8	387	208
00821	South Seminoe	2,290	800	34.9	558	195
10219	Station 8	5,993	1,040	17.4	804	140
10533	Steamboat Lake	1,085	960	88.5	261	231
	Totals	**354,948**	**73,847**	**20.8 (average)**	**53,752**	**11,216**

grazing preference minus any preference that has been temporarily withheld or suspended. On the basis of the 21% proportion mentioned above, approximately 11,200 AUMs of this active preference are within the study area boundaries. The carrying capacity for the 22 allotments ranges from 4.1 acres to 12.7 acres per AUM, with the average at about 7.1 acres per AUM.

The predominant class of livestock in the allotments within the study area is cattle. Approximately 41,200 AUMs of preference are for cattle (80%) and 10,600 AUMs for sheep (20%). The seasons of use for the 22 grazing allotments in the study area range from winter only to year-round.

BLM grazing allotments are placed into the categories "M" (maintain existing resource conditions), "I" (improve resource conditions), and "C" (custodial management). Of the 22 grazing allotments in the study area, 1 is in the "M" category (6,000 acres, 2%), 12 are in "I" (265,000 acres, 74%), and 9 are in "C" (84,000 acres, 24%).

MINERALS

This section pertains only to minerals on public lands; information on private and state minerals is not presented here.

Leasable Minerals

Approximately 17,000 acres in the study area are included in federal oil and gas leases. Six oil and gas wells have been drilled within or near the boundary of the study area. Two of the wells were completed as producing gas wells, and four were dry holes.

Because of the presence of rocks proven as reservoirs nearby and in other basins, the potential of the Hanna Basin for oil and gas production is classified as moderate (based on indirect evidence) except in and surrounding known fields, known geologic structures, and producing wells. Such areas are rated as having high potential (based on direct evidence). The rest of the study area is rated as no potential (based on indirect evidence) or low potential (based on indirect evidence).

There are no geothermal leases within the study area. Two thermal springs exist near Alcova Dam (Bliss 1983). Although both of these springs are now covered by Alcova Reservoir or the dam, field checking indicates that at least part of this hot water is released through a pipe below the dam's spillway. This area may average about 55 milliwatts per square meter of heat flow (Hinckley and Heasler 1984). This value is toward the low end of the spectrum, indicating that the geothermal potential of the area is low (based on indirect evidence).

Coals exist in the northeast part of the study area, but they are generally thin and of low quality. At present such coal is not commercially minable. The area around the east shore of Seminoe Reservoir is rated as high potential (with direct and indirect evidence). This rating is based on the known commercially valuable coalbeds being mined by Medicine Bow Coal Company. The area within the Hanna Basin underlain by rocks of the Mesaverde Group and younger is classified as low potential (based on direct evidence) because coal occurring in these formations are not commercially valuable at this time. The rest of the area has low or no potential for coal (based on direct and indirect evidence).

Mining of coal in the Hanna Coalfield started in the 1860s and continues today (Glass and Roberts 1980). A total of 4.1 million tons of coal were produced in 1988 from the four active coal mines in the Hanna Basin: Seminoe II, Rosebud, Cyprus-Shoshoni, and Medicine Bow (Glass 1989). The last is within the study area.

The Medicine Bow Mine permit includes a total of 19,392 acres, of which 22% is within the boundary of the study area. Medicine Bow Coal Company has plans to add about 4,300 acres to this permit in the future, at which time about 26% of the permit acreage would be within the study area. Under the terms of the permit, mining is allowed to within 100 feet from the high water line of Seminoe Reservoir.

Medicine Bow Coal Company is now mining coal from within the boundary of the study area. For about the next five to ten years, most of its production should come from this area.

In a letter dated January 28, 1990, Arch Minerals refers to its recent resource recovery and protection plan (1988), saying that Medicine Bow Coal Company lists minable reserves of approximately 18.4 million tons (63%) within the study area boundary and about 10.8 million tons (37%) outside the boundary. It is expected that about 15 million tons of these reserves will be mined within the next five years, 10 million within the boundary and 5 million outside the boundary.

Locatable Minerals

There are six existing mining claims in or near the study area. Four claims for bentonite deposits associated with the Mowry Shale are north of the Alcova townsite near where the Mowry Shale outcrop underlies U.S. Highway 220.

Prospecting for uranium has occurred in the study area. The nearest uranium mine known to have existed in the area was the Little Man Mine. Except at this mine, commercial quantities of uranium have not been discovered in this area.

Other locatable mineral occurrences are asbestos, beryl, jade, copper, gold, graphite, iron, and gypsum (alabaster). Much of the Granite Mountains portion of the study area has been withdrawn from mining claim location since the start of the BOR projects in this area. Because of the withdrawals, very little exploration work for locatable minerals has taken place.

Salable Minerals

Active and recently closed mineral material permits were issued for sand and gravel, aggregate, rip-rap, decorative rock (mossrock/flagstone), or reject rock (fine or coarse reject material from sand and gravel crushing or screening operations). Most of the material disposed of to date has been given to the BOR under free use permits for aggregate, rip-rap, and decorative rock (mossrock/flagstone). One common use area for decorative rock is still active. To date only 32 tons ($151.00) of decorative mossrock/flagstone have been sold from this area.

Good quality sand and gravel deposits along the Miracle Mile have been used by permittees as aggregate sources.

FISHERIES

Fishing Opportunities and Pressure

Fishing opportunities in the study area are diverse, with excellent quality fishing available. Fishing seasons are open all year. Walleye are found in all major fisheries, and they are present in good numbers and sizes. Both Seminoe and Pathfinder reservoirs have produced a state record walleye in the last five years. Catch rates for trout are good to excellent, and trophy-sized trout are available in all waters.

Fishing is the major recreational activity in the study area, and it is a major source of income for the region and for the state of Wyoming. In 1989, fishing pressure on Seminoe, Pathfinder, Alcova, and the Miracle Mile amounted to around 132,600 angler days, of which about 41,000 days were by out-of-state fishermen.

The WGFD stocks about 100,000 trout in the study area each year and spends approximately $150,000 per year on management activities. WGFD personnel believe that Seminoe and Pathfinder reservoirs are underfished. The WGFD estimates that these fisheries could sustain 50% more angler pressure if fishing use could spread out over these waters instead of concentrating around the limited launch facilities (McMillan 1990). Such an increase in fishing use on Pathfinder and Seminoe reservoirs over 1989 use would amount to approximately 40,000 angler days.

Major Fisheries

The Dugway

The Dugway is a popular trout fishery about 3.5 miles long. This area, which is classified as a Class II water of statewide importance, is popular with local residents, and it is being used by increasing numbers of other anglers from Wyoming and other states. Angler use of this area has increased noticeably in the past ten years, but no reliable estimates of current use are available.

Creel census data are not available for the Dugway area, but catch rates for trout 9 to 13 inches long are excellent. Walleye also are present in spring and summer. Both walleye and trout move up into the North Platte River in spring and many remain until fall. Population estimates for 1988 indicatethat there are approximately 1,000 trout per mile in the Dugway area (WGFD 1990b).

The area is subject to periodic inflows of muddy water from erodible watersheds upstream in summer and fall. This sediment stays in suspension for long periods and is not easily flushed out of the system at low flow. The effect on the fishery is that certain types of fishing, such as flyfishing and spin casting, are much less effective. During muddy water periods, fishing in the Dugway is less popular, although bottom fishing continues to do well.

Portions of the Dugway are privately owned, but very little land is posted or fenced. Access is excellent from the county road paralleling the river through the canyon.

Seminoe Reservoir

The best fishing of the five reservoirs in the study area is at Seminoe. Shore anglers accounted for 41% of the 1984 catch and boat fishermen, 50%. The catch rate for trout was slightly better from shore than from boats. The catch rate was 2.24 fish per day in the Red Hills and Seminoe Boat Club areas in 1984. In winter, the ice fishing catch rate is excellent (WGFD 1989a).

Although the local population has decreased, use figures from Seminoe State Park show that boat fishing may be up about 80% since 1985 (Wyo. Rec. Comm. 1990b). The WGFD estimates that fishing pressure on Seminoe in 1989 was 50,000 angler days.

Seminoe Reservoir is stocked with Eagle Lake rainbow trout, fall-spawning rainbow trout, and Snake River cutthroat trout. Sampling in 1988 showed that trout and walleye were present in about equal numbers (WGFD 1989a).

Walleye predation on trout and the high cost of stocking for the number of fish caught are some of the problems that exist in the Seminoe Reservoir fishery (McMillan 1990). Another problem is the fluctuation of reservoir water levels, which prevents establishment of rooted aquatic and shoreline vegetation. Problems also occur from the lack of certain types of facilities and services.

Kortes Reservoir

Kortes Reservoir is not stocked, but it contains a naturally reproducing population of brown trout. Rainbow and cutthroat trout are present either from natural reproduction or through drift from Seminoe. A naturally reproducing population of walleye also exists.

Cliffs and extremely rugged terrain limit access to and use of the Kortes Reservoir fishery. At high water in the spring, the entire area is closed because extremely turbulent water emanates from Seminoe Dam.

The Miracle Mile

This popular fishery is rated by the WGFD as a Class I water of national importance. Anglers at the Miracle Mile fish from the shore or wade and fish. When water levels are high in Pathfinder, there is a small boat fishery at the lower end of the Miracle Mile. Developed camping facilities and access roads line nearly the entire length of this blue ribbon fishery.

The opportunity to catch larger trout and to hone angling skills keeps the area popular. A primary feature of this heavily fished area is the large numbers of trout more than 16 inches long.

Many trout caught in the Miracle Mile move in from Pathfinder Reservoir to spawn. Walleye from Pathfinder Reservoir also move up into the Miracle Mile to spawn. To reduce the take of brown trout, which reproduce naturally at the Miracle Mile, the WGFD has limited the take of brown trout to one fish per day (WGFC 1990).

The WGFD estimates the 1989 pressure on the Miracle Mile at 20,000 angler days (McMillan 1990). Competition for the best areas can be intense, particularly from April through October.

Flows in the Miracle Mile fluctuate considerably, causing fishing to be inconsistent. Rapid fluctuations in water levels can strand wading fishermen on islands. The canyon at the southernmost part of the Miracle Mile is poorly accessible because of the necessity to do some rock climbing to reach the area. Attempts at access here pose a risk to visitors.

Pathfinder Reservoir

The latest survey of angler use of Pathfinder Reservoir was conducted by the WGFD in 1976. Angler use in that year was calculated at 51,000 angler days, of which 35,000 were spent by bank anglers (Wichers 1989). The WGFD believes current use on Pathfinder is down to about 30,000 angler days per year (McMillan 1990). This drop can be attributed to the decline in local population, loss of a premiere trout fishery, and low water levels.

Pathfinder Reservoir is stocked with spring rainbow, fall rainbow, Eagle Lake rainbow, and Snake River cutthroat trout. Ohrid trout, a strain of brown trout, are now producing naturally in the reservoir, as are walleye. Brown trout are not stocked in the reservoir, but they reproduce naturally in the Miracle Mile and migrate into Pathfinder. In a 1988 sampling, walleye and trout were caught in about equal numbers (WGFD 1989a). An overpopulation of nongame fish is having an adverse effect on the sport fishery in Pathfinder. In 1986, suckers comprised 78% of the catch in gill net samples.

Low water levels in 1989 and 1990 have caused Pathfinder Reservoir to become muddy from downcutting fine sediment deposits in the old river bed and from wave action on muddy shores. This has reduced the primary production, which in turn reduces trout growth and increases the time when trout are vulnerable to predation from walleye. Low water levels also have concentrated predators. Because of these factors, stocking of trout in Pathfinder has been cancelled for 1990.

Problems in the Pathfinder Reservoir fishery are similar to those at Seminoe. Most significantly, boat launching facilities at Pathfinder are available only at the north end of the reservoir. Few boaters are willing to travel 10 to 20 miles from the dam area by boat to fish the south end. This results in a large portion of Pathfinder being underfished.

Alcova and Gray Reef Reservoirs

Although Alcova is about one-tenth the size of Seminoe or Pathfinder, it often receives as much fishing pressure. In a 1984 angler survey, fishing pressure over the entire year was estimated at about 31,850 angler days. Natrona County accounted for 92% of the angler pressure on the reservoir in 1984. Current fishing pressure on Alcova is about 30,000 angler days (McMillan 1990).

Alcova Reservoir is stocked with spring- and fall-spawning rainbow and a few gizzard shad. A fish population sampling in 1988 shows that populations of rainbow trout, the most abundant trout in Alcova, are continuing to decline (WGFD 1989a). Walleye were half as abundant as trout, with an average length of 18.5 inches. The large size of the walleye is forcing the stocking of much larger trout than is desirable from a cost standpoint.

There is substantial winter ice fishing at Alcova. The February 1985 use was an estimated 3,046 angler days (Peterson 1986a). The catch rate in winter 1985 was about 1.5 fish per hour, a good rate for winter trout fishing.

The shallow Gray Reef Reservoir is not stocked by the WGFD (McMillan 1990). Game fish present are from drift from Alcova Reservoir and the section of the North Platte River just below Alcova Dam. The fishery is of little consequence and is rarely used by boaters. The WGFD does not monitor this fishery. Water levels fluctuate significantly in some seasons, and at times Gray Reef Reservoir is almost dry.

WILDLIFE

Species in the Study Area

The study area contains a wide variety of habitats and a diverse assemblage of wildlife species and populations.

Big Game

The big game species in the study area are pronghorn antelope, mule deer, elk, and bighorn sheep. Portions of several pronghorn and deer herd units lie partially within the study area, as do two elk herd units and one herd unit for bighorn sheep.

The amount of crucial winter range in the study area represents a relatively small amount of the total crucial winter range throughout the herd unit for each species except bighorn sheep. About half of the bighorn sheep crucial winter range in the herd unit lies within the study area.

Small Game

The predominant small game animal throughout the study area is the cottontail rabbit. Most backwater areas and drainages with suitable cover have good populations of cottontails. The Miracle Mile area receives considerable small game hunting pressure while other areas receive very little use.

Threatened or Endangered Species

Threatened or endangered (T&E) species in the study area include bald eagles, which roost near Alcova and Pathfinder reservoirs and along the North Platte River. They hunt in winter throughout the area. Fremont Canyon and the cliff areas between Pathfinder and Seminoe reservoirs provide excellent roosting habitat for bald eagles. The Seminoe area has been identified for designation as an area of critical environmental concern (ACEC) in the Medicine Bow-Divide RMP/EIS (USDI, BLM 1987a, 1988). The Miracle Mile and Fremont Canyon have been identified as important winter roosting habitat for bald eagles. A 1/4-mile buffer zone on either side of the river in Fremont Canyon has been established by BLM to protect this habitat.

Waterfowl

Good waterfowl habitat can be found at the west end of the Sweetwater Arm of Pathfinder Reservoir (within the PNWR), at the Steamboat lakes area, in other areas of PNWR with suitable cover and food resources, and along the Miracle Mile. In general, waterfowl habitat is limited throughout the study area, and hunting is primarily limited to those areas described above. Waterfowl use all the water areas for resting and feeding during spring and fall migrations.

Raptors

There are several raptor concentration areas in or near the study area. The most common nesters are golden eagles, ferruginous hawks, prairie falcons, and great horned owls, with an occasional red-tailed hawk, burrowing owl and Swainson's hawk.

Upland Game Birds

Sage grouse are by far the most common upland game bird in and around the study area. Several leks (strutting grounds) are within the study area. Sage grouse are hunted throughout the study area where suitable habitat is found, and where access is not restricted. The Miracle Mile area and public lands north of the checkerboard provide hunting opportunities.

Blue grouse occur in relatively small numbers in the Morgan Creek and the Miracle Mile areas, and a few birds are harvested annually.

Furbearers, Predators, and Trophy Game

Furbearers, as defined by WGFD laws, are badger, beaver, bobcat, marten, mink, muskrat, and weasel. All furbearers but the marten are likely to be found within the study area. The most common predator to be found throughout the study area is the coyote.

The only trophy game animal known to be in the study area is the mountain lion, which is most commonly associated with mule deer habitat. Within the study area, lions are found in the Seminoe Mountains, the Shirley Mountains, and the Bennett Mountains. Black bear, another trophy species, may possibly occur in some of the same areas.

American White Pelican and Double-crested Cormorant

A nesting colony of American white pelicans was discovered at Pathfinder Reservoir in 1984. Before this discovery, only one nesting colony was known to Wyoming. Current surveys indicate that there may be fewer than twenty breeding locations for white pelicans in the entire United States (Sidle, Koonz, and Roney 1985). Because the number of breeding localities is limited, the white pelican has been identified as a "sensitive species" by the USFWS (USDI, FWS 1985).

The Pathfinder colony is located on Bird Island. This colony is now recognized as a significant breeding population in the United States, and maintenance of the colony should help ensure that this species does not become threatened or endangered.

The major threat to the white pelican breeding population is probably disturbance of nesting birds by humans. When human activity approached to within 440 yards (1/4 mile), pelican behavior was disrupted in various ways (Findholt 1987).

Another threat to the nesting colony is the fluctuating water levels at Pathfinder Reservoir, which vary throughout the white pelican nest/brood rearing period. This fluctuating water level has become a matter of critical concern over the past two to three years, and especially in 1990, as drought conditions have caused water levels to drop. This has formed a land bridge between Bird Island and the mainland, allowing mammalian predators to reach the nesting white pelican colony.

Double-crested cormorants, which also nest on Bird Island, are abundant and apparently increasing in numbers.

While there is concern over the fate of the sensitive American white pelican, anglers and WGFD fisheries biologists have expressed concern that both this bird and the double-crested cormorant are causing significant reductions in game fish populations in the North Platte and Sweetwater rivers. Recent and continuing studies by the WGFD indicate that pelicans are not eating many trout (Findholt 1987).

Double-crested cormorants can prey heavily on newly stocked rainbow trout in the North Platte River. The WGFD is especially concerned about the Class I blue ribbon sections of the river below Kortes and Gray Reef dams (Wichers 1990).

Caspian Tern

Caspian terns historically have nested on Bird Island in Pathfinder Reservoir and at four other locations in Wyoming. The Caspian tern has been listed by the WGFD as a Priority I nongame species in need of special management in Wyoming because its population in Wyoming is greatly restricted in range and numbers, and the amount of suitable habitat is declining (WGFD 1987b). This means extirpation is possible. The species is sensitive to human disturbance at the few breeding colonies in the state (WGFD 1989d).

Habitat Areas of Special Interest

Riparian habitats, those habitat types associated with running or standing water (such as wetlands, subirrigated meadows, and cottonwood habitats) are important to a large number of wildlife species. The diverse plant composition and structure provided by these habitats support wildlife numbers and diversity several times greater than the surrounding upland sites.

There is little if any riparian habitat along the reservoir shorelines in the study area because of the frequent fluctuations in water level. Woody riparian habitat can be found between the upper end of Fremont Canyon, upstream to Pathfinder Dam; along the Miracle Mile; and in the Sweetwater Arm of Pathfinder Reservoir. Meadow riparian habitat occurs in the Soda Lakes area, where some emergent vegetation is found; in marshy potholes near the Narrows in Pathfinder Reservoir; and along short segments of streams flowing into the main reservoirs.

CULTURAL RESOURCES

Overview

The portion of the North Platte River drainage in the study area offers a unique opportunity to study human prehistory and history. Its strategic location where the topography changes from plains to mountains makes the presence of cultural resources likely.

Cultural resources in the drainage system represent all periods of human prehistory and several periods of American history. They are critical for an understanding of prehistoric and historic lifeways in this area.

Known Cultural Resources

A file search by BLM personnel revealed that the study area contains 271 recorded cultural resources, of which 13 were historic sites, 253 were prehistoric sites, and 5 contained both historic and prehistoric components. Only 1 site, the Pathfinder Dam, is listed on the National Register of Historic Places.

Known prehistoric cultural resources in the study area include a village site, short- and long-term campsites for small and large family groups, all phases of hunting activities, all phases of plant procurement and processing, lithic procurement areas, toolmaking areas, and burials. The time periods covered include Paleo-Indian (12,000 to 7,500 years before present—B.P.), Early Plains Archaic (7,500 to 5,000 B.P.), Middle Plains Archaic (5,000 to 2,500 B.P.), Late Plains Archaic (2,500 to 1,500 B.P.), Late Prehistoric (1,500 to 650 B.P.), Protohistoric (1,300 to 300 B.P.), and Historic (300 B.P. to present).

Historical resources in the study area include sites related to exploration and settlement of the West, transportation, ranching, mining, and the early development of water as an energy, agricultural, and recreational resource. Site types include historic trails, sheepherding camps, stock corrals, homesteads, dam sites, and other historic structures.

Pathfinder Dam is recognized as a significant feature that is related to important people, events, and engineering designs in our national historic heritage. The dam was named after John C. Fremont, an early explorer of the West who was known as "The Pathfinder." The physical appearance of Pathfinder Dam is essentially the same today as when it was completed in 1909.

An interpretive site adjacent to Pathfinder Dam houses artifacts and tells the history of the projects. The museum, which is operated by NCPPG, is open irregularly in summer, depending on the availability of a caretaker. Generally it is open most weekends and one or two weekdays each week in summer.

Potential Cultural Resources

Review and analysis of existing data indicate that site density in the study area may be as high as 13.9 sites per section. The two valid block inventories produced site densities of 13.3 and 13.9 sites per section. On the basis of the above figures and a straight-line projection, it can be anticipated that between 466 and 2,818 sites could exist.

Existing Impacts on Known Sites

The cultural resources data base in the study area is being disturbed by vandalism and unauthorized collection. The area has been known to collectors for decades. The "collecting season" is from April through November; the number of people collecting increases or decreases depending on weather conditions and reservoir levels.

Next to vandalism, recreation has caused the most impacts on cultural resources. The impacts usually are associated with unauthorized ORV use. This was documented by Mariah Associates in 1984. Further impacts are occurring along all shorelines where there is access by vehicle or boat.

Another significant cause of impacts on cultural resources is the fluctuation of water levels of the reservoirs in the study area. The wave action and differing water levels further erode significant sites; they also expose sites that can be affected by unauthorized collection. A significant amount of vandalism occurs on newly discovered sites as more area is exposed.

PALEONTOLOGICAL RESOURCES

The paleontological resources of the study area are poorly understood and poorly documented. Few paleontological investigations have been conducted in the area. Known localities include several fossil bone localities, a fossil turtle locality, and the pterosaur tracks near Alcova.

Only the pterosaur tracks, which are of international significance, have received much attention from the public and the federal land managing agencies. The location is one of fewer than 10 such localities known in the world. Some vandalism occurred in the late 1970s in and around the track area, when some panels were illegally removed from public land.

PROTECTION OF VISITORS AND RESOURCES

The primary responsibility for search and rescue, emergency medical services, and general law enforcement rests with the sheriffs of Natrona andCarbon counties. Two deputies from Natrona County are cross-deputized with the Carbon County sheriff's office for emergency response only. Two deputies from the Natrona County sheriff's office are stationed at Alcova and occasionally patrol the eastern end of Pathfinder. At present the Carbon County sheriff's office has no deputies stationed in the part of Carbon County that contains the study area, and no routine patrols are conducted into that area. The WGFD provides personnel and boats to the Carbon County sheriff's office for search-and-rescue incidents when requested.

One BLM ranger who works for the Casper District office is stationed in Casper. Response time from Casper to the study area in an emergency could be as much as two to three hours, if the ranger was available.

Lieutenant Anderson of the Natrona County sheriff's office says there are approximately 20 to 30 emergency medical service (EMS) calls per year at Alcova. Sheriff Don Sherrod of Carbon County says that his office is aware of some four to five EMS calls per year in the study area and that ambulance response time is two hours from Rawlins.

Life Flight of the Wyoming Medical Center in Casper operates a fully equipped advanced life support helicopter from Casper. Response times into the study area would be within one hour. However, Wyoming Medical Center ambulance director Bob Dean said the remoteness of the study area makes it difficult and time-consuming for ill or injured persons to notify authorities so that they can get EMS help.

The Natrona County sheriff's office estimates that the office receives some 40 law enforcement calls per week in summer and 10 calls per week in winter. During the major summer holiday weekends, the sheriff's office commits 8 to 10 deputies to the area. Patrols are conducted by vehicle, boat, and horseback.

Carbon County Sheriff Sherrod reported that in 1989 his office responded to approximately 20 law enforcement calls, and that the emergency response time to the Miracle Mile is at best one hour, when the deputy is available.

The law enforcement authority of state and local governments on public land is limited. In cases of vandalism or theft of property, federal agencies are treated like any other landowner, but federal statutes or BLM resource-specific regulations (43 CFR) can be enforced on public land only by BLM rangers, special agents, or the FBI. For example, only federal law enforcement personnel can enforce ORV restrictions, permits and closures. Likewise, vandalism, theft, or trespass on public land also can be handled only by federal law enforcement personnel.

Structural fire protection for developments in or near the study area is provided by the fire departments of Natrona County or Carbon County, as appropriate to the location. Management of wildland fires in the study area is divided between the BLM Casper and Rawlins districts, which maintain cooperative agreements for fire control with the county fire departments for initial attack.

SOCIOECONOMIC CONDITIONS

Population

Carbon and Natrona counties are respectively the third and fourth largest counties (geographically) in Wyoming. With estimated populations of 17,744 and 66,133, respectively, these two counties combine to make up an estimated 17% of the state's 480,012 population (Emp. Sec. Comm. of Wyo. 1989). Both are rural and sparsely populated except for Casper and Rawlins, county seats and major trade centers for their respective regions. Population figures for these counties are shown in table 7.

Employment

The principal industries in Carbon County are mining, ranching, energy development, and tourism (Emp. Sec. Comm. of Wyo. 1989). The principal industries in Natrona County are related to minerals; most important are oil and gas production and drilling exploration. Employment by sector is shown on table 8.

Recreation Values

Entire Study Area

Although the reservoirs of the study area were developed for irrigation water and/or power generation, their water creates the single most outstanding and appealing attraction for people who visit them and participate in a multitude of activities.

The approximate number of visitor days in the study area each year is reflected in table 9. In the data provided by the managing agencies, it was noted that collection procedures varied from lake to lake, with no single uniform methodology in place. The actual volume of recreation use is open to question in view of the 1982-1987 out-migration of population as well as the access, facilities, and other factors surrounding each reservoir.

In 1989, visitors to the study area used an estimated total of 282,200 visitor days in recreation-related activities. This is 39,300 fewer visitor days than were estimated for 1982, which was considered one of the "boom" years for the region. This decrease is largely due to the

TABLE 7

POPULATION TRENDS OF CARBON AND NATRONA COUNTIES AND SELECTED COMMUNITIES FOR 1980 AND 1989, WITH PROJECTIONS FOR 1998

County/City	1980[1]	1989[2]	Percentage of Change	1998[3]	Percentage of Change
Carbon County	21,896	17,744	-19.0	18,343	03.4
Rawlins	11,547	9,430[4]	-18.3	9,689[5]	02.8
Hanna	2,288	1,455	-36.4	—	
Sinclair	586	515	-12.1	—	
Medicine Bow	953	585	-38.6	—	
Natrona County	71,856	66,133	-08.0	70,087	06.0
Casper	51,016	49,000[6]	0.04	57,167[7]	16.7
Mills	2,139	1,984	-07.3	—	
Evansville	2,652	2,117	-20.2	—	
Bar Nunn	782	727[8]	-07.0	—	
Alcova[9]	200	100	-50.0	—	
Wyoming	**469,557**	**480,012**	**02.2**	**507,341**	**05.7**

[1] 1980 census except where noted.

[2] Furtney, Steve, *Wyoming Population and Employment Forecast Report* (Cheyenne, WY: Wyoming Department of Administration and Fiscal Control, 1988).

[3] Furtney, Steve, "Population Estimates for Wyoming Cities and Towns (unofficial) 1989. Furtney is with the Wyoming Department of Administration and Fiscal Control.

[4] Rawlins Community Development Department, information provided in telephone interview on December 12, 1989.

[5] Estimates are based on projected growth of Carbon County and historical percentage of county total accounted for by Rawlins.

[6] Information provided by Charles Davis, Casper City Planning Department, in interview on December 12, 1989. In contrast, the Wyoming Department of Administration and Fiscal Control indicates that Casper's population is 46,954.

[7] Casper City Planning Department, *Employment/Population Projections: Natrona County/Casper 1980-2000* (Preliminary draft) (Casper, WY: Casper City Planning Department, 1987).

[8] Casper Area Economic Development Alliance, Inc., *Bar Nunn Municipal Facts* (Casper, WY: Casper Area Economic Development Alliance, 1989).

[9] Estimated figures. Permanent and seasonal residents are included.

substantial reported declines in visitation to Alcova and Pathfinder reservoirs compared to 1982 levels (see table 9). For comparison, visitor days at Flaming Gorge NRA in 1989 amounted to 391,377, nearly the same level as in 1982 (USDA, FS1990), and visitor days at Bighorn Canyon NRA in 1989 were 242,260, nearly 22% more than 1984 levels (Howe 1990).

It is estimated that the value of these 1989 visitor days in the study area amounted to $8,497,042 in Wyoming's economy (based on an expenditure value of $30.11 for the average recreation day, from a visitor survey conducted by the University of Wyoming in 1988 for the Wyoming Recreation Commission) (see table 10). This represented an estimated 1.1% of the state's overall travel expenditures (U.S. Travel Data Center 1989). This is $1,183,323 less than the 1982 level of $9,680,365. The reduction in visitation was largely due to out-migration of population from the area.

Seminoe Reservoir

The estimated number of visitor days at Seminoe Reservoir in 1989 was 78,500. This is up 21% from 1982 levels. From this figure, an estimated total of $2,363,635 was spent in Wyoming by visitors to the reservoir, which is $406,485 more than 1982 levels (see table 10).

TABLE 8

1980 AND 1988 COVERED EMPLOYMENT FOR CARBON AND NATRONA COUNTIES

	Carbon County			Natrona County		
Sector	**1980 Employment**	**1988 Employment**	**Percentage of Change**	**1980 Employment**	**1988 Employment**	**Percentage of Change**
Agricultural Services	109	20	-81.7	385	249	-35.3
Mining[1]	3,565	538	-84.9	7,319	2,619	-64.2
Construction	1,119	347	-69.0	3,677	1,811	-50.8
Manufacturing	445	479	07.6	1,848	1,472	-20.4
Transportation/Utilities	410	325	-20.7	2,681	1,810	-32.5
Wholesale Trade	196	162	-17.4	4,209	2,175	-48.3
Retail Trade	1,467	1,446	-01.4	6,295	5,612	-10.9
F.I.R.E.[2]	307	200	-34.9	1,695	1,410	-16.8
Services	2,149	1,881	-12.5	8,230	7,664	-06.9
Public Admininistration	595	702	18.0	1,263	1,330	05.3
Totals	**10,362**	**6,100**	**-41.1**	**37,602**	**26,152**	**-30.5**

SOURCES: Information from Employment Security Commission of Wyoming, *Carbon County Covered Employment 1980* and *Natrona County Covered Employment 1980* (Casper, WY: Employment Security Commission of Wyoming, 1980), and *First-Fourth Quarters 1988: State and County Summary of Covered Employment and Total Payrolls by Industry* (Casper, WY: Employment Security Commission of Wyoming, 1988).

NOTE: Employment figures represent averages.

[1] Coal, oil, gas, metal mining, and quarrying of nonmetallic minerals.

[2] Finance, insurance, and real estate.

TABLE 9

1982 AND 1989 ESTIMATED VISITOR DAYS IN THE STUDY AREA

Site	Visitor Days 1982	Visitor Days 1989[1]	Percentage of Change
Alcova Reservor	162,400[2]	142,900	-12.0
Gray Reef Reservoir	4,300[2]	4,300	—
Pathfinder Reservoir	56,000[3]	27,500	-50.9
Miracle Mile	33,800[4]	29,000	-14.2
Seminoe Reservoir	65,000[1]	78,500	+20.8
Total	**321,500**	**282,200**	**-12.2**

NOTE: All figures have been rounded.

[1] Based on recreation use capacity, developed recreation facilities, local population trends, and review of published and unpublished information on recreation use.

[2] United States Department of the Interior, Bureau of Reclamation, *Recreation and Wildlife Summary: Recreation Data: Input Data List, Reporting Year 1982* (4/20/83) (Casper, WY, 1983).

[3] *Recreation and Wildlife Summary: Recreation Data: Input Data List, Reporting Year 1982* (7/30/82) (Casper, WY, 1982).

[4] *Recreation and Wildlife Summary: Fish and Wildlife Data: Input Data List, Reporting Year 1982* (Casper, WY, 1983).

TABLE 10

ESTIMATED TOTAL VISITOR DAY EXPENDITURES IN THE STUDY AREA FOR 1982 AND 1989

Site	1982	1989	Difference
Alcova/Gray Reef Reservoirs	5,019,337	4,432,192	-587,145
Pathfinder Reservoir	1,686,160	828,025	-858,135
Kortes/Miracle Mile	1,017,718	873,190	-144,528
Seminoe Reservoir	1,957,150	2,363,635	+406,485
Total	**9,680,365**	**8,497,042**	**1,183,323**

NOTE: Expenditures for both 1982 and 1988 are based on an average resident/nonresident rate of $30.11 per day to allow for comparison without extraneous influences. Rate is from a 1988 visitor survey conducted by the University of Wyoming for the Wyoming Recreation Commission.

TABLE 11

ESTIMATED NONRESIDENT VISITOR DAY EXPENDITURES AND TOTAL DOLLAR AND EMPLOYMENT IMPACTS IN THE STUDY AREA IN 1989

Site	Visitor Days	Expenditures	Total Dollar Impacts[1]	Employment[2]
Alcova/Gray Reef Reservoirs	17,664	$ 574,080	$ 918,528	39.6
Pathfinder Reservoir	5,500	178,750	286,000	12.3
Kortes/Miracle Mile	23,200	754,000	1,206,400	52.0
Seminoe Reservoir	27,868	905,710	1,449,136	62.4
Total	**74,232**	**$2,412,540**	**$3,860,064**	**166.3**

SOURCES: United States Department of the Interior, Bureau of Reclamation, *Pathfinder Reservoir Area Management Plan:—Lower Missouri Region, North Platte Project*, (N.p., 1982) and *Alcova/Gray Reef Reservoir Area Management Plan: Lower Missouri Region, Kendrick/Missouri River Basin Projects* (N.p., 1984); Larry Peterson, "North Platte River (Miracle Mile) Use Investigations: 1982" (Casper, WY: Wyoming Game and Fish Department, 1984) (Administrative report, Fish Division); Wyoming Recreation Commission, *Visitor Characteristics* (Cheyenne, WY, 1989) (Information compiled from 1988 visitor survey of Seminoe Reservior, which was conducted by the University of Wyoming).

NOTE: Expenditure figures are based on University of Wyoming expenditure rate of $32.50 per visitor day.

[1] Total dollar change in output that occurs for each additional dollar of output delivered to final demand. Based on an average multiplier of 1.6, from United States Department of Commerce, Bureau of Economic Analysis, *Regional Multipliers* (Washington, 1986).

[2] Represents the total change in jobs for each additional million dollars of output delivered to final demand. Based on 69 jobs per million output, from United States Department of Commerce, Bureau of Economic Analysis, *Regional Multipliers* (Washington, 1986).

It is estimated that 35.5% of the visitors to Seminoe Reservoir are nonresidents (Wyo. Rec. Comm. 1989). Of the 78,500 visitor days in 1989, 27,868 visitor days could be classified as nonresident (assuming that the survey data are valid over the entire reservoir). An estimated total of $905,710 in direct new monies were brought into the local and regional economy (based on a nonresident recreation visitor day value of $32.50—see table 11). Assuming an average multiplier of 1.6 for nonresident expenditures, the estimated total impact of these new monies on the economy would amount to $1,449,136 (U.S. Dept. of Com. 1986).

For comparison, an estimated total of 23,075 nonresident visitor days in 1982 resulted in about $749,938 in direct new revenues coming into the local and regional economy, with an estimated total economic impact of $1,199,900.

The Miracle Mile

An estimated total of 29,000 visitor days occurred in recreation at Miracle Mile in 1989. This is 14.2% lower than 1982 estimates (see table 9). As a result of recreation activities in this area, $873,190 was spent in 1989. This is $144,528 less than 1982 expenditures (based on present-day values).

A 1982 census indicated that Colorado fishermen made up 57% of the users at the Miracle Mile area and Wyoming fishermen 36%, while the remaining 7% came from other states (Peterson 1984). Since that time, patterns of origin appear to have changed: WGFD personnel now say that earlier census data indicating that 80% of users were from out of state would be more relevant to current conditions.

If an 80% factor is assumed to be a reasonable nonresident figure today, 23,200 visitor days in 1989 could be attributed to nonresident visitation. This would mean some $754,000 in direct new monies were brought into the Wyoming economy, with a total estimated impact of $1,206,400 through a multiplier effect. For comparison, in 1982 an estimated total of $703,040 was expended in present day values, down $50,960 from 1989 levels.

Pathfinder Reservoir

An estimated total of 27,500 visitor days were expended at Pathfinder Reservoir in 1989. This is some 31% lower than the 1982 level. Residents and nonresidents spent an estimated total of $828,025 in Wyoming. This is down $858,135 from 1982 estimates (see table 10).

About 20% of the visitors to Pathfinder Mountain and Bishop Point are nonresidents (USDI, BOR 1982a). Assuming this figure is still valid in 1989 and can be projected for the entire lake, a total of 5,500 visitor days could be attributed to nonresidents. This indicates that about $178,750 of new monies were brought into the state in 1989, causing a total economic impact of $286,000.

Nonlocal visitors and maintenance of the facilities add new income. Approximately 5% of the visitors come from Wyoming counties outside the region. This represents 1,375 visitor days and $38,115 in expenditures.

Alcova and Gray Reef Reservoirs

An estimated 147,200 visitor days were spent at Alcova and Gray Reef reservoirs in 1989. This amounted to an estimated total of $4,432,192 being spent in Wyoming as a result of recreational activities in these two areas. This is a decrease of 11% from 1982 levels, when an estimated total of $5,019,337 was expended by recreationists.

About 85% of the visitation at Alcova and Gray Reef reservoirs is made by local residents (USDI, BOR 1984). Of the remaining 15%, an estimated 12% are nonresidents, while the remaining 3% come from outside the region but within the state. Based on the above percentage of nonresidents, some 17,664 nonresident visitor days would have occurred at Alcova and Gray Reef. Using the nonresident visitor day value, $574,080 in new monies would have been brought into the local economy by these visitors. A total impact of $918,528 could be expected from nonresident expenditures.

The remaining 125,120 visitor days (excluding 4,416 visitor days by other than local residents) are local resident visitor days. They would generate an estimated total of $3,590,738 within the local economy (based on a value of $27.72 for a Wyoming resident visitor day from the survey mentioned earlier). It is estimated that out-of-region residents visiting Alcova/Gray Reef expended about $122,412. This is new income to the area, but the amount is not large enough to have much effect on the local economy.

In addition, substantial fixed expenditures are made by residents and some nonresidents to recreate within the study area. These expenditures help to sustain a local retail market for sporting goods, RVs, and boats within the Casper area.

Hunting and Fishing Values

Hunting

Major big game species in the study area are managed in herd units, while harvest estimates are made from smaller units called hunt areas. The study area impinges on only a small percentage of each affected hunt area, rendering only an estimated 196 recreation days of hunting in 1988 and representing from 1% to 2% of the total (see table 12).

Based on 1989 WGFD total per-day expenditures for each of the major big game species, some $22,413 was spent by hunters using the study area. This figure indicates the value of hunting expenditures within the study area. An estimated $13,036 of new monies entered Wyoming's economy from nonresident hunting in the study area in 1988. The estimated total impact of this would be $20,858.

Other game such as rabbits, upland game birds, and waterfowl are hunted in the study area, but the magnitude of expenditures by hunters is thought to be small and not significant to Wyoming's economy.

Fishing

Fishing is one of the most important generators of revenue in the five-reservior region. An estimated total of 132,600 angler recreation days were used in the study area in 1989. This represents an increase of 15% over the 1984 level (see table 13).

Surveys, plans, and available estimates indicate that about 60% of the visitors to the study area fish at least for part of their visit. Visitor survey data for 1988 from the DPHS indicated that 74% of visitors boat fish in Seminoe State Park. BOR reservoir area management plans indicate that 39% of all visitors fish at Pathfinder. Fishing is the major activity in the Kortes/Miracle Mile area, where it is estimated that 95% of the visitors fish. NCPPG estimates that 30% of the people who visit Alcova and Gray Reef fish.

Based on the WGFD's average total expenditure rate of $39.16 per fisherman day, $5,192,616 was spent in Wyoming in 1989 by people fishing in the study area (WGFD 1990a). This figure represents the largest single source of recreation revenue in the study area and is in consonance with WGFD's total 1988 per-day fishermen expenditures, which indicate that fishing is the largest generator of revenue in game pursuit sports in Wyoming.

TABLE 12

ESTIMATED BIG GAME RECREATION DAYS IN THE STUDY AREA FOR 1988

	Hunter Recreation Days		
Species	**Resident**	**Nonresident**	**Total**
Antelope	64	42	106
Mule Deer	48	24	72
Elk	15	3	18
Total	**127**	**69**	**196**

SOURCE: Wyoming Game and Fish Department. *Herd Unit Report for District Five, 1988*, *Herd Unit Report for District Six, 1988*, and *Herd Unit Report for District Seven, 1988* (Cheyenne, WY, 1988).

TABLE 13

1984 AND 1989 ESTIMATED FISHERMAN DAYS IN THE STUDY AREA

Site	1984	1989
Alcova/Gray Reef Reservoirs	32,000[1]	30,000[2]
Pathfinder Reservoir	31,000[3]	30,000[2]
Kortes/Miracle Mile	20,000[4]	20,000[5]
Seminoe Reservoir	30,000[3]	50,000[6]
Other lesser areas[7]	2,260	2,600
Total	**115,260**	**132,600**

[1] Larry Peterson, "Alcova Reservoir Fisherman Use Survey: April 1, 1984 to March 31, 1985" (Casper, WY: Wyoming Game and Fish Department, 1986) (Administrative report, Fish Division).

[2] Wyoming Game and Fish Department estimates.

[3] Steven W. Wolff, Michael D. Marcus, Molly S. Kinsey, and Benjamin R. Parkhurst, *Fishing in Wyoming: Results of the 1984 Fishing Survey (revised)* (Laramie, WY: Western Aquatics, Inc., 1985). Prepared for Fish Division, Wyoming Game and Fish Department.

[4] Interview of Al Conder, Wyoming Game and Fish Department, Casper, on February 12, 1990.

[5] Letter from Al Conder, Wyoming Game and Fish Department, Casper, dated January 19, 1990.

[6] Based on visitor data from Seminoe State Park and WGFD information.

[7] Estimated at 2% of other study area reservoirs.

The figures given above for fishing expenditures in Wyoming do not include out-of-state expenditures for mail order tackle, magazines, boats, and other equipment, which benefit other areas of the country. This figurerepresents a total value which includes resident, nonresident, and tourist expenditures.

To give the reader a picture of new monies flowing into Wyoming's economy, the focus will be on nonresident and tourist expenditures that represent new money to the Wyoming economy from fishermen plus new dollars added from operation and maintenance of the facilities in the study area. An average expenditure by a nonresident/tourist fisherman of $33.30 per day (based on WGFD data) will be used to estimate these values (WGFD 1990a). To utilize this figure, a rough estimate was derived of total average nonresident/tourist fishermen days in the study area.

Based on nonresident visitor days indicated previously, an average of 37% of the users are from other states (Alcova/Gray Reef, 12%; Pathfinder, 20%; Miracle Mile, 80%; and Seminoe State Park, 35.5%). This is not out of line with the 41.5% nonresident visitor average for Wyoming's 13 state parks (Wyo. Rec. Comm. 1989). This amounts to 49,062 angler days. At the expenditure rate mentioned above, $1,633,765 in nonresident expenditures would be made in Wyoming. Since most visitors come not only to fish but often to engage in other activities such as camping, some of these new monies may be captured in the visitor day estimates on recreation. The estimated total economic effect would be $2,614,024, based on a 1.6 multiplier effect for Wyoming (U.S. Dept. of Com. 1986). In addition, some 24 jobs may have been created because of these nonresident expenditures in the local/state economy (U.S. Dept. of Com. 1986). In addition to these basic inflows of new monies, there is a multiplier effect on both business and employment within the local and regional economies.

Fiscal Administration

Recreation Management

The administration, operation, maintenance, and development of the lands and facilities at the reservoirs and Miracle Mile takes considerable funding. See table 14 for an estimate of the income and expenditures related to the operation and maintenance of the recreation facilities. These figures include the cost of fish stocking and land easements for selected years. Because comprehensive information was not available, this table is far from complete, but it does provide a general representation of the costs of operating these facilities.

In 1988, nearly 78% of income from Alcova Reservoir was derived from trailer court rentals and cabin leases, with the remainder coming from the concessions, camping fees, special use fees, and the like (NCPPG 1989a). During the same period, wages ($102,000) made up the biggest expenditure item (71.6%) for the county in operating the recreational facilities, followed by the trailer court, construction, electrical expenses, etc. (NCPPG 1989a). At both Miracle Mile and Seminoe State Park, operation and maintenance costs constituted the greatest expenditures except for fish stocking costs.

Assuming that an estimated $526,320, or 75% of the total expenditures to operate the recreational facilities in the study area in 1988 included wages, salaries, and contract labor and that an estimated 90% stayed within the local economy, then one could assume that about $473,700 of these monies flowed into the local economy representing new money with a total economic impact of $833,700, based on an income multiplier of 1.76 (U.S. Dept. of Com. 1986).

Fisheries Management

The WGFD estimates that for every fish harvested in the study area, $15.66 is returned to the state's economy (WGFD 1990a). However, it should be noted that raising fish is expensive; in fact, it is the largest single recreation-related expense in the study area. Sport fisheries accounts for 21.5% of the WGFD program budget (WGFD 1989c). With WGFD expenditures on improvements, stocking, access acquisition, labor costs, and other related expenses, much of this money stays in Wyoming and circulates within the economy, resulting in a multiplier effect.

Property Valuations

One of the most developed sites in the study area is Alcova Reservoir. There are about 100 cabins and 158 trailers near the shore of the reservoir. These improvements are privately owned, but the sites are leased from the NCPPG. These sites represent a substantial source of income for NCPPG; in fact, in 1988, nearly 78% of the 1988 income from Alcova Reservoir was derived from cabin sites and trailer spaces (NCPPG 1989a). Typically, lakefront cabin site leases go for $300 per year; sites back from the lake lease for $250 per year (Yates 1990). Trailer sites are more expensive; they typically lease for $496 per year (Yates 1990).

The cabins sell for anywhere from $20,000 to $50,000 under current market conditions, with some cabins selling for as much as $100,000 (Bradshaw 1990; Langdon 1990). Trailers with spaces average between $15,000 and $18,000 but can cost as little as $5,000 or as much as $40,000 (Langdon 1990). Unlike the cabin sites, where no waiting lists exist, the high demand for trailer spaces has created a long waiting list. Trailers are not authorized to be sold with a lot, unless the purchaser is next on the waiting list. Some people wanting trailer spaces must wait as long as six years.

Cabins have an assessed valuation of $240,972; trailers are assessed at $142,792 (Natr. Co. Assessor 1990). At this level of valuation, these properties benefit Natrona County as revenue through an estimated $24,956 in property taxes each year, based on 1989 mill levy rates. The level of property assessments will change in 1990 in response to a change to fair market value assessments.

The Alcova Reservoir marina and the ski and boat club properties have a combined assessed valuation of $24,786. This brings the county $1,612 in tax revenues (Natr. Co. Assessor 1990).

Other properties such as the marinas at Pathfinder and Seminoe reservoirs bring in additional property taxes to Natrona and Carbon counties, respectively. For example, the boat club at Seminoe has 83 trailers, 3 houses, and a store (marina). Other private holdings, mostly in agricultural land surrounding Seminoe Reservoir, are further sources of county income.

Power Generation Income and Expenditures

Power generation is a viable and important use of the reservoirs. The BOR delivers hydroelectric power to the Western Area Power Administration, U.S. Department of Energy (WAPA). That agency markets an estimated 726.8 million kilowatt hours of power yearly from these

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TABLE 14

1982 AND 1988 ESTIMATED INCOME AND EXPENSES RELATED TO THE OPERATION OF RECREATIONAL FACILITIES IN THE STUDY AREA

		1982			1988		
Reservoir	**Managing Agency**	**Income**	**Expenditures**	**Net**	**Income**	**Expenditures**	**Net**
Alcova/Gray Reef	Natrona County[1]	101,074	208,442	-107,368	135,240	142,380	-7,140
Pathfinder	Natrona County[2]	—	8,967	-8,967	—	—	—
Miracle Mile	WY Game & Fish	7,830[3]	7,830[4]	—	37,180[3]	37,180[4]	—
Seminoe S. P.	WY Rec. Comm.[5]	2,853	44,936	-42,083	7,092	64,276	-57,184
Other:							
All Reservoirs	WY Game & Fish[6]	228,095[3]	228,095	—	457,923	457,923	—
Total		**339,852**	**498,270**	**-158,418**	**637,435**	**701,759**	**-64,324**

NOTE: Income includes cabin and trailer leases, concessions, camping fees, license fees, and federal aid funds. Expenditures include operation and maintenance costs, wages, construction, and supplies.

[1] Natrona County Parks and Pleasure Grounds: 1982 data from letter dated January 14, 1933; 1988 data from letter dated January 6, 1989.

[2] United States Department of the Interior, Bureau of Reclamation, *Pathfinder Reservoir Area Management Plan: Lower Missouri Region, North Platte Project* (N.p., 1982). In 1984, Natrona County Parks Department reported an income of $11,216 and expenditures of $56,976. No further data are available.

[3] Interview with Mike Stone, Wyoming Game and Fish Department, on March 29, 1990.

[4] United States Department of the Interior, Bureau of Reclamation, *Recreation & Wildlife Summary: Input-Data List, Report Year 1982* (Casper, WY, 1982) and *Recreation & Wildlife Summary: Input-Data List, Report Year 1988* (Casper, WY, 1988).

[5] Wyoming Recreation Commission, Fiscal information on Seminoe State Park, provided on untitled sheet dated February 8, 1990 (Cheyenne, WY, 1990). Note that 1982 income was from Soil and Water Conservation Funds, boat club fees, and $7,651 BOR costs; 1988 income was derived from camping fees and boat club. Camping fee income more than doubled in 1989, bringing in $14,792. This was largely due to increases in overnight fees from $2 to $4 and in yearly park passes from $10 to $25.

[6] Interview with Al Conder, Wyoming Game and Fish Department, Casper, on March 19, 1990.

four power plants. WAPA sets the power rates on the basis of a schedule to repay BOR's investment and to cover the operation and maintenance (o & m) costs to run and operate the dams and power plants. The average revenues for the ten years from 1979 through 1988 amount to $5.2 million per year (also see table 15).

The irrigation districts pay for some of the costs to cover o & m expenses on the dams. For example, the irrigation districts pay for half of these costs for Pathfinder Dam, and the Casper/Alcova Irrigation District pays a flat $10,000 per year for o & m costs on the Kendrick Project. WAPA picks up the rest from its sales of power (Loutas 1990b). The BOR pays for the o & m costs at Kortes and Gray Reef. WAPA's sales revenues go into the general treasury and not back to the BOR, which receives its funding each year through appropriation.

Table 15 contains information on the costs of operating the dams and power plants in the study area. Also listed is the income derived from the sale of electric power. This appears to indicate a positive net balance of revenue for 1982 and 1988, respectively. The total picture of 1982 expenditures is not available; therefore, a large positive balance over costs is shown in the table.

Expenditures for o & m for the facilities listed in table 15 can be considered largely direct new income to the state and local economies. It should be noted that bypass flows can significantly reduce the amount of electric generation revenues created. For example, a 100 cfs outflow loss of power at Fremont Canyon can amount to about $105,000 in lost revenue per year; at 300 cfs this can translate into a loss of about $316,000 in lost revenue (Loutas 1990b).

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TABLE 15

ESTIMATED HYDROELECTRIC GENERATION INCOME/OPERATION COSTS FOR 1982 AND 1988

	Fiscal Year 1982			Fiscal Year 1988		
Facility	**Income**	**Expenditures**	**Net Difference**	**Income**	**Expenditures**	**Net Difference**
Alcova Dam	731,725			844,653		
Dam/reservoir operation and maintenance		93,536			52,515	
Land resource management[1], [2]					136,006	
Power plant/switchyard operation and maintenance[1]		250,352			595,782	
Seminoe Dam	799,589			774,391		
Dam/reservoir operation and maintenance		100,564			129,981	
Land resource management[1], [2]					115,903	
Power plant/switchyard operation and maintenance[1]		421,440			581,558	
Kendrick Project		326,254				
Subtotal	**1,531,314**	**1,192,146**	**339,168**	**1,619,044**	**1,611,745**	**7,299**
Pathfinder Dam						
Dam/reservoir operation and maintenance		50,011			88,943	
Land resource management[2]					60,050	
Subtotal		**50,011**	**-50,011**		**148,993**	**-148,993**
Fremont Dam						
Power plant	1,695,624			1,346,642		
Switchyard operation and maintenance[1], [2]		152,770			852,911	
Subtotal	**1,695,624**	**152,770**	**1,542,854**	**1,346,642**	**852,911**	**493,731**
Gray Reef Dam						
Dam/reservoir operation and maintenance		17,946			14,991	
Land resource management[1], [2]					28,448	
Subtotal		**17,946**	**-17,946**		**43,439**	**-43,439**
Kortes Dam	945,541			867,904		
Dam, power plant, switchyard operation and maintenance		254,403			412,776	
Land resource management		80,760			218,969	
Subtotal	**945,541**	**335,163**	**610,378**	**867,904**	**631,745**	**236,159**
GRAND TOTAL	**4,172,479**	**1,748,036**	**2,424,443**	**3,833,590**	**3,288,833**	**544,757**

SOURCE: Letter from John Lawson, Bureau of Reclamation, Casper, dated February 12, 1990.

[1] Includes replacements, additions, extraordinary maintenance, water scheduling, etc.

[2] 1982 replacements, additions, extraordinary maintenance, etc. not available.

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FEASIBILITY FINDING AND RECOMMENDATIONS

INTRODUCTION

In this section of this report, the feasibility of designating the study area as a national recreation area is evaluated according to the criteria in Policy Circular No. 1 of the Recreation Advisory Council (1963). Each criterion is quoted, then the attributes of the study area in relation to that criterion are discussed. The BLM study team's finding follows each discussion.

CRITERIA AND EVALUATION

Criterion 1: Spaciousness

National recreation areas should be spacious areas, including within their perimeters an aggregate gross area of not less than 20,000 acres of land and water surface, except for riverways, narrow coastal strips, or areas where total population within a 250-mile radius is in excess of 30 million people.

The North Platte study area contains about 151,300 acres, of which about 17,700 are privately owned and 1,400 are state-owned. Total federal ownership is about 132,200 acres (approximately 87% of the study area), which includes about 44,600 acres of surface water when the five reservoirs are at total capacity.

The study area contains about 320 miles of reservoir shoreline and several miles of the North Platte River. Actual river distance is dictated by reservoir storage, but it generally ranges from about 5 to 12 miles. The area covers about 50 miles north to south and its east-west dimension ranges from 1 to 20 miles.

> **Finding:** The study area is spacious and fulfills the requirements of criterion 1. It is larger than all but seven of the 32 designated NRAs.

Criterion 2: Carrying Capacity

National recreation areas should be located and designed to achieve a comparatively high recreation carrying capacity in relation to type of recreation primarily to be served.

About 4.5 million people live within a 250-mile radius from the study area. Current records indicate that there were about 282,000 visitor days and about 133,000 angler days in the study area in 1989. In comparison, visitor days at Flaming Gorge NRA in 1989 amounted to about 391,000, nearly the same level as in 1982 (USDA, FS 1990), and visitor days at Bighorn Canyon NRA in 1989 were about 242,000, nearly 22% more than 1984 levels (Howe 1990).

Most visitors to the study area come from Casper and Rawlins, but about 80% of the present recreational users of the Miracle Mile are from out of state. The Alcova and Miracle Mile areas may be at or near their optimal carrying capacities for recreation and fishing. Approximately 55% of the recreation visitation in the study area occurs at Alcova Reservoir, which covers only 7% of the study area. In contrast, only 8% of the recreation visitation occurs at Pathfinder Reservoir, which covers more than 41% of the study area. This uneven distribution of use could be partially corrected by improved access and development of additional basic facilities.

Alcova Reservoir is indicative of the high recreation carrying capacity and the variety of recreation pursuits potentially available throughout the study area. Public comments received during the feasibility study period indicated that many people want to see the semiprimitive character of the area retained, along with the associated recreation experience. However, strategically located improvements designed to increase opportunities for water-based recreation would benefit recreationists using the study area and might draw some users from Alcova and the Miracle Mile to other parts of the study area.

> **Finding:** The carrying capacity of the study area is high at specific locations, and it could be increased throughout the study area. Preserving the area's natural character and the associated recreation experience is important, but the study area is large enough that the recreation capacity could be expanded so that recreationists could be accommodated and dispersed by development of additional facilities. Such facilities as boat launch ramps, campgrounds, picnic areas, vault toilets, and potable water could be added without harm to the natural character of the area. Thus, the requirements of criterion 2 are met.

Criterion 3: Significant Recreation Opportunities

National recreation areas should provide recreation opportunities significant enough to assure interstate patronage within the region of service, and to a limited extent should attract patronage from outside the normal service region.

Considering the extent of this reservoir and river system (about 44,600 acres of surface water at full capacity), the study area provides recreation opportunities significant enough to draw visitors from within and outside of the normal service region. The study area is fairly near the Denver metropolitan area, and people from that area probably will continue coming to the study area for recreation if something is offered that is not available closer to home.

The blue ribbon fishery on the Miracle Mile draws an estimated 80% of its use from out of state, primarily from Colorado. Significant cultural, historical and paleontological resources, a variety of topographic features ranging from spectacular river canyons to sand dunes to granite mountains ranges, and a significant reservoir fishery for walleye and trout add to the recreational significance of the study area. Its wildlife resource also is diverse: elk, bighorn sheep, deer, antelope, raptors, and various waterfowl inhabit this area.

Also available in the study area are opportunities for significant water-based recreation pursuits such as sailing, float-boating, water skiing, and windsurfing. Rock climbing, a backcountry byway, hunting and fishing, and superlative scenery for sightseeing and photography add to the value of the study area.

> **Finding:** With a reservoir system totaling about 45,000 acres of surface water at capacity, and the extent of the North Platte River, the study area does provide significant recreation opportunities that can draw visitors from within and outside the region. The requirements of criterion 3 are met.

Criterion 4: Need for Federal Involvement

The scale of investment, development, and operational responsibility should be sufficiently high to require either direct federal involvement or substantial federal participation to assure optimum public benefit.

Although local involvement is a critical function in the study area, the scale of investment to realize the significant recreation opportunity in this area would require federal involvement. At this time many of the recreation opportunities are provided through investment by county and state agencies, notably NCPPG, WGFD, and the DPHS. It is estimated that these agencies invest more than $500,000 per year to operate facilities, make improvements to facilities, and enforce regulations. Very few federal funds are expended by the BLM, the BOR, or the USFWS for operations, maintenance, or development of recreation facilities in the study area.

Even a minimal level of development and the acquisition of needed access at strategic locations would exceed the funding capabilities of nonfederal sources. Construction and maintenance of roads would be well beyond the funding capacity of county road departments.

There has been a continuing need for a bridge to be placed across the North Platte River below Pathfinder to provide access to the east shoreline of the reservoir. A low-water crossing has been constructed several times, but it continues to wash out, the last time early in 1990. The major obstruction to building such a bridge has been the funding: the estimated cost is $450,000. These are the types of funding needs for which federal support is essential.

Economics information presented in the feasibility study indicates that recurring costs for operation and maintenance of recreation-related facilities exceed the income received by state and county managing agencies (see table 14 under "Socioeconomic Conditions").

The present management situation in the study area is complex; the result is that no federal agency takes the responsibility to ensure long-range planning or to obtain adequate facilities for the recreating public. A review of the management responsibilities of the various agencies reveals that recreation does not receive much attention. That is not particularly the fault of any one agency; responsibilities are so divided throughout the area that recreation needs simply do not receive a high priority in any agency's budget or management scheme.

> **Finding:** The magnitude of investment needed to enhance recreation opportunities in the study area would require federal involvement. This situation fulfills the requirements of criterion 4. A single federal agency should be given the mandate to manage resources and recreation uses in the study area and to take the lead in encouraging a partnership among the recreating public, private landowners, local managing entities, the state, and the federal government.

Criterion 5: Strategic Location and Accessibility

Although nonurban in character, national recreation areas should nevertheless be strategically located within easy driving distance, i.e., not more than 250 miles from urban population centers which are to be served. Such areas should be readily accessible at all times for all-purpose recreational use.

The Denver metropolitan area is approximately 240 miles from the study area, or four hours' driving time. The Salt Lake City metropolitan area is about 300 miles away, or five hours' driving time.

Access to the south part of the study area is via Interstate 80 and Carbon County Road 351 (the Seminoe Road); from the north, visitors can arrive in Casper via I-25. From Casper, Wyoming Highway 220 provides access to paved Natrona County roads leading to Alcova, Pathfinder, and other areas in the northern part of the study area. The Seminoe Road, which begins at Sinclair and progresses northward to Alcova, provides access to Seminoe Reservoir and the Miracle Mile for most of the year. The roads to north and south Red Hill in Seminoe State Park provide fair access most of the year.

These primary access roads move visitors to the area, but secondary roads that provide access to the reservoirs or river sections in the study area are poor, especially those in the Pathfinder and Seminoe areas. Many of them cannot be used for year-round access. Most of the area is used year-round (for example, ice fishing takes place on the reservoirs in winter), but not all the county roads are open all the time.

The major access route from Casper to the study area is via Wyoming 220. This two-lane highway can be dangerous during summer, when it is heavily used. Several county roads provide good access to Alcova Reservoir

Except at Alcova and the Miracle Mile, the recreation potential of the study area is not being realized because a lack of access to large portions of the area limits recreation use. Improved access to federal shoreline would disperse use, leading to better accommodation of additional users from outside the immediate area, should local businesses and chambers of commerce wish to publicize the area.

> **Finding:** Strategically located within the specified 250 miles of one major population center and slightly farther from another one, the study area has the potential to draw regional visitation and, to a lesser extent, national visitation. Public access to all the major recreation areas is reasonably available; thus, the study area fulfills the requirements of criterion 5.

Criterion 6: Recreation As Dominant Use

Within national recreation areas, outdoor recreation shall be recognized as the dominant or primary resource management purpose. If additional natural resource utilization is carried on, such additional use shall be compatible with fulfilling the recreation mission, and none will be carried on that is significantly detrimental to it.

The study area is the site of diverse resource uses: storage of irrigation water, hydroelectric power generation, livestock grazing, coal mining, oil and gas leasing and development, and many types of outdoor recreation, including hunting and fishing.

The situations in the study area most likely to conflict with NRA designation are surface coal mining, hydroelectric use, irrigation, the fluctuating water levels in the storage reservoirs, and the checkerboard landownership pattern around Seminoe Reservoir.

Part of the mine permit boundary for the Medicine Bow coal mine is within the study area, along with associated coal leases. The mine permit includes a total of 19,392 acres, of which 22% (4,266 acres) is in the study area. The company plans to add about 4,300 acres to the permit area, at which time about 26% of the permit area would be inside the study area. Under the terms of the permit, mining is allowed as close as 100 or 200 feet from the high water line of Seminoe Reservoir. Medicine Bow expects to mine about 15 million tons of coal in the next five years, of which 10 million are inside the study boundary. Coal mining would not be a compatible use in an NRA.

According to the mineral information gathered during the feasibility study, oil and gas potential is low to moderate throughout the study area. About 17,000 acres have been leased for oil and gas inside the study area. Six oil and gas wells have been drilled inside or near the study area; two of these were producers, but there has been no production from them for more than three years.

Locatable minerals are known to exist in the study area, but all activity is outside the present boundary. Locatable minerals such as uranium, asbestos, jade, beryl, lead, molybdenum, and copper are known to occur. The development of these commodities is highly dependent on demand, and it seems unlikely that demand would reach a point where these minerals would be commercially extracted.

Pathfinder and Seminoe reservoirs are principal storage reservoirs for irrigation downriver on the North Platte. The water level in these two reservoirs fluctuates considerably according to inflow and irrigation demand. It does not appear there is a way to maintain a level that is consistent and thus favorable for recreation without legislative intervention. No storage capacity has been allocated for fisheries or recreational uses, and Pathfinder and Seminoe reservoirs could be drawn down to the point that their use for recreation and fisheries would be limited.

Given the provisions of the North Platte Water Decree and the existing allocation of water resources, there is no practical opportunity to ensure a minimum conservation pool for fisheries or for recreational purposes. Irrigation is the primary purpose and power generation a secondary purpose. Alcova Reservoir is managed in such as way that water levels remain constant to provide flows for the Casper Canal. This protects recreation uses at that reservoir, and it is a major factor in Alcova's popularity.

From the southernmost part of Seminoe Reservoir north to within 3 miles of Seminoe Dam, landownership is checkerboard. These alternating sections of public and private ownership contribute to the difficulty of land management. Private landowners have expressed their opposition to a national designation and may be unwilling to grant easements over their private land.

Parts or all of 22 grazing allotments are within the study area. These allotments involve about 73,800 acres of public land and approximately 11,200 AUMs in the study area. Rangeland management (and associated livestock management) is compatible with recreation, but visitor facilities need to be protected in some fashion, possibly by fencing off parking areas, restrooms, and campgrounds.

Present withdrawals in the study area could be viewed as conflicting with each other. The BOR withdrawals were established to provide water for irrigation and power generation. The recreational use that has occurred here is incidental to that primary purpose, but it has become important. The PNWR was established expressly to provide habitat for waterfowl and other wildlife. The question here is, At what point do these withdrawals or a national designation begin to interfere with one another?

> **Finding:** In general, the public opposes the "dominant use" theme of criterion 6. The perception is that existing uses would be diminished or excluded and that private property could be condemned to promote recreation. The dominant use in the study area is irrigation and power generation.
>
> Given the variety of permitted uses in the study area, such as the operational coal mine, fluctuating reservoir levels, and private lands, management tradeoffs between these and other uses probably would be necessary at some time. Considering the fact that at least one of those management tradeoffs might be detrimental to recreation some of the time, the BLM believes the study area does not fulfill the requirements of criterion 6.

Criterion 7: Fulfilling Priority Recreation Needs

National recreation areas should be established only in those areas where other programs (federal and nonfederal) will not fulfill high priority recreation needs in the foreseeable future.

A substantial part of the local recreation needs and some regional needs are being met by active programs of NCPPG at Alcova and Pathfinder, by the Wyoming DPHS at Seminoe Reservoir, and by the WGFD. A successful recreation partnership has evolved between these entities and the federal land managing agencies. Many members of the recreating public have expressed satisfaction with this management and the recreation opportunities provided by these sources. Comments have indicated that many people would like to see existing management responsibilities continued.

The recreation opportunities that are presently provided in the study area strongly suggests that future priority recreation needs can be met by a combination of government programs and local management and investment. Funds from federal agency budgets, possible special congressional appropriation for specific projects, state, county, and private investments, and matching funds from the Land and Water Conservation Fund offer a variety of funding approaches to provide for future recreation needs.

The study points out that the greatest recreation need is at Pathfinder and Seminoe reservoirs. Pathfinder has been in existence for more than 80 years and is characterized by a lack of recreation development. Road access is available to about 3 miles of the existing shoreline (117 miles atcapacity). Seminoe has more than 180 miles of shoreline. It is popular year-round for residents of Rawlins, but the Seminoe State Park is growing in popularity with out-of-state users. Even though it is minimally developed, Seminoe offers the most important water-based recreation opportunity in south central Wyoming. Developing a base level of recreation facilities and improving existing facilities could be satisfied through existing federal and other state and local programs.

> **Finding:** There is a variety of federal and non-federal programs in place or available that could provide the necessary funding tp fulfill high priority future recreation needs. While federal support is necessary to fund needed developments, a national designation is not warranted to initiate and accomplish development necessary to meet future needs. The requirements of this criterion are not met.

FEASIBILITY FINDINGS

Based on our evaluation, the study area meets the conditions specified in criteria 1, 2, 3, 4, and 5. It does not meet the conditions specified in criteria 6 and 7.

RECOMMENDATION AND RATIONALE

Recommendation

The BLM recommends that the congressional delegation not pursue legislation that would lead to a designation of the study area as a national recreation area.

Rationale

Various uses have been permitted in the study area in the past through withdrawals, leases, licenses, permits, and agreements that have allocated resources. Whether an observer agrees or disagrees with the present resource allocations, they do exemplify the various multiple uses that can coexist in a given area without further congressional action resulting in a national designation.

From a review of several NRA management plans it is quite apparent that recreation is considered the dominant use and that protection of resources is a secondary goal. While a variety of other uses is allowed in other NRAs, these uses are managed so as not to be detrimental to recreation. Thus in other NRAs it appears that one economic use, in this case recreation, is substituted for other uses. An NRA could not be managed when all existing resource uses have equal importance. Management of an NRA would require some change in existing uses if the primary intent of a national designation is recreation and resource protection.

A driving force behind this study was that an NRA might help to bolster the economy of Carbon and Natrona counties, but little information is available in published reports on the positive or negative economic benefits of NRA designation. To make any reliable projections relative to this study area and recreation spending if designation occurred would be speculative. It is not realistic to think that a national designation would automatically increase visitation. The key is the type of recreation pursuits offered andthe quality of the facilities that exist or might be developed to draw visitors. Quality recreation can be provided and visitation can be increased just as readily without a national designation.

Many local people do not favor a national designation. There is a preference for local involvement in the management of the area and to help determine the recreation quality and quantity. The BLM strongly supports that local role, and believes that the federal and private partnership as it now exists can be preserved and strengthened to promote recreation in the study area without a national designation.

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MANAGEMENT NEEDS AND OPPORTUNITIES

INTRODUCTION

Several management opportunities are available in the study area whether or not the area is designated an NRA. Actions taken in response to these opportunities could help to resolve some of the issues and concerns raised by the public.

Identification of opportunities should be guided by objectives that would capture the essence of what the public desires and should provide a framework to guide action for this area.

Two excellent sources for identification of problems and opportunities are the comments received from the public during scoping and the resource data collected by BLM personnel during the earlier phases of the study. Information from these two sources strongly suggests the following basic guidelines for management in the study area.

> Existing local management of recreation sites in the study area should be continued. Facilities authorized by concession or lease should be maintained, and full advantage should be taken of local interest and expertise to provide facilities and maintenance. Options should be left open to expand the federal/local management partnership in the future.
>
> The present management of public resources in this area is complex. One agency should be responsible for management of land resources. The managing agency would not usurp the primary responsibilities of other managing entities; rather, it would act as facilitator to coordinate management activities of federal, state, and local agencies.
>
> Basic facilities should be provided, but developments should not interfere with the character of the area; opportunities for a semiprimitive recreation experience should be preserved. Some needs that have been identified are access to more shoreline at Pathfinder and Seminoe reservoirs, parking areas at the end of those access points, restrooms, low water boat ramps, and some campgrounds. Existing facilities need to be maintained, and any new facilities developed should be of high quality.

MANAGEMENT OBJECTIVES

> The objectives presented here reflect a strong multiple use management philosophy. They are based partially on the BLM's Recreation 2000 program. These objectives relate directly to general and specific opportunities discussed in detail later in this section.

To enhance recreation by improving overall access to the public lands and reservoirs in the study area.

To develop or improve facilities so that recreational use can be dispersed throughout the study area. Facilities to be built should reflect a balance between public demand, protection of public land resources, fiscal responsibility, and visitor safety.

To maintain recreation facilities in a manner that will protect the resource, the public, and the public investment.

To maintain most of each large reservoir as a largely natural area with a minimal number of fabricated improvements.

To manage vehicle access and recreational use in a manner designed to reduce user conflicts and to minimize resource damage and trespass onto adjacent private lands.

To strengthen and expand cooperative partnerships with local, state, and other federal agencies so as to provide for efficient on-the-ground management.

To take advantage of local interest and expertise in providing management and maintenance of the recreation areas.

To assign management responsibility for land resources and uses to one federal agency.

To create or maintain opportunities for involvement of the private sector (including volunteers) in the provision of goods, services, maintenance, and facilities to meet public needs. Marketing strategies to draw visitors to this area should be handled mostly by the private sector.

MANAGEMENT PROPOSALS

Introduction

Proposals for managing this area are presented here in two categories, proposals for the entire study area and specific proposals related to individual locations. These proposals would contribute to providing solutions to what the BLM believes are the major management needs in the study area. Identification of proposals has been guided by our objectives.

Entire Study Area

Federal Management

Multiple-use management should be continued and federal-state-private agreements and partnerships now in effect should continue, as should state and local agencies' authorities.

Most of the lands and resources in the study area are federal, and there is a definite facilitative and focused role for a federal agency. The BLM recommends that one federal agency be appointed to coordinate and direct federal management and to facilitate interagency partnerships. Multiple-use management is the mission for the BLM, and that agency would be a logical choice to fill this role.

Water and water operations of the BOR and enforcement by the WGFD of state game and fish laws should not be interfered with, and present local management responsibilities should be preserved. Long-range planning for recreation in this area could be incorporated into existing resource management plans of the Great Divide and Platte River resource areas through planning amendments. This would not necessitate any congressional legislative action.

Interagency Coordination

Because many federal, state, and county agencies manage resources in the study area, interagency coordination is necessary to ensure efficient and effective management and to facilitate cooperation on a variety of specific opportunities. The BLM, the BOR, the DPHS, the WGFD, and Natrona and Carbon counties will need to work together if available opportunities are to be realized. The estimated cost of interagency coordination is $6,000 per year.

Roads and Facilities

To improve recreational opportunities, access to public lands in the study area must be improved. Improvement of existing facilities and development of new facilities, especially at Pathfinder and Seminoe reservoirs, would lead to better dispersal of recreational use throughout the area and would allow for protection of public land resources and promote public safety.

The key to providing recreation opportunities is construction of new roads and upgrading or reconstruction of existing trails and roads to make the public lands along the shorelines of the reservoirs legally and physically accessible.

Good quality basic facilities are needed on the shorelines of Pathfinder and Seminoe reservoirs. Once roads have been constructed to the shorelines, then parking areas, low-water boat ramps, restrooms, and potable water can be provided to serve the basic needs of the recreating public. Development of the facilities at carefully selected sites along the shorelines would also improve public boating safety.

The estimated cost of recurring maintenance and management of roads and new facilities is $75,000 per year. Some of the costs could be offset through contracts with local governments and businesses, through the use of challenge grants, or by management options such as user fees.

Collection of Information

Available visitor surveys for this area are superficial at best. Other than use data defining visitor and angler days, very little is known about the preference of present or potential visitors. If quality services are to be provided to the recreating public, it must be determined what visitors want. Basic information must be obtained on visitor preferences, expectations, activities, trip and travel characteristics, and recreation desires. Visitor surveys and a local marketing strategy based on the survey data would have the potential to draw regional and even national recreationists without any federal designation.

A reliable and systematic method is needed for collecting information on visitation and visitor profiles. This information, which will lead to a better understanding of the needs of area users, is essential so that all entities can plan for and provide better opportunities.

Monitoring of use and resource conditions in the area would make it possible to anticipate trends in use and resource conditions, to identify any needed remedial actions, and to take appropriate actions in a timely manner. It is estimated that acquiring this information would cost $35,000 per year on a recurring basis for at least the first 10 years.

Visitor Services and Safety

"Visitor services and safety" includes a broad range of activities from law enforcement to visitor contacts to simply having a regular agency presence in the area. Regular ranger patrols would help ensure compliance with various regulations regarding recreational activities. With increased opportunities for recreation in the area and possible increased use over time, it would become the responsibility of the managing agency to monitor use, to minimize effects on the resources and adjacent lands, and to solve use-related problems before they become a threat to resources or public safety. The estimated yearly cost of providing this service is $15,000.

Off-Road Vehicle Management

With the combination of proposed new legal access routes and improved road conditions, it will be increasingly important to manage ORV use so as to decrease resource damage and trespass onto private land. ORV management could include a broad-scale program of installing informational and directional signs, patrols by rangers, and educational presentations to users of the area. Close coordination with the owners of private property within and adjacent to the study area is critical to the success of this program. The annual recurring cost is estimated at $20,000.

The BLM has estimated the costs for these proposals, including recurring costs of management. The recurring management costs shown in table 16 include the estimated cost of performing work such as road grading, as well as the cost of labor, vehicles, and supplies to do the work. To perform all of these management actions on a recurring basis, approximately four new full-time positions would be needed. One-time costs for planning and construction are discussed in the following section about specific areas.

Specific Locations

Logical segments of the study area are discussed in detail because each segment has distinct management needs and provides unique opportunities. Proposals discussed for each segment represent a minimal level of development to meet users' needs. Some proposals are included for privately owned or state-owned lands and sites because comments from the public identified the need for action. Recreation proposals are illustrated on the Proposed Recreation Plan map.

One-time costs for planning, easement acquisition, and construction are included in the following discussions and shown in table 17. These figures reflect the minimum cost of bringing roads or facilities up to a usablestandard. Where easements over private land would need to be acquired, estimates have been included of the fair market value of such easements (as would be determined by BLM appraisers). Actual costs could be higher, depending on the design standards applied and quality of construction planned; however, the BLM could not pay more than the appraised fair market value to acquire these easements. BLM personnel have estimated these costs by using criteria that would be used to estimate the fair market value and by considering the average costs of similar projects constructed by the BLM in past years.

The Dugway and Seminoe Reservoir

At the Dugway, cooperative management agreements being developed with grazing lessees will enhance management of recreation and grazing. The estimated cost to implement a cooperative management plan is $46,000. The cost of improving the existing boat ramp and adding another ramp is estimated at $10,000.

Along with improved access to the shoreline of Seminoe and opportunities identified for the Dugway, the public identified needs for more facilities and for improvement of existing facilities in the developed areas at Seminoe State Park. Specific major concerns were a need for more low-water boat ramps and the need to upgrade existing

TABLE 16

RECURRING MANAGEMENT COSTS FOR LEAD AGENCY MANAGING RESOURCES IN THE STUDY AREA

Management Action	Yearly Costs[1]	Full-time Positions[2]
Interagency coordination	6,000	0.2
Maintenance of roads and facilities	75,000[3]	2.0
Monitoring of visitation and visitor services	35,000	1.0
Visitor services and safety	15,000	0.5
ORV management	20,000	0.5
Total	**151,000**	[illegible]

[1] Includes labor, vehicles, and supplies.

[2] An indication of the number of new positions/employees needed to carry out a given action.

[3] Costs could be partially offset by user fees collected and returned to the management agency, or through contacts with local governments and businesses.

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TABLE 17

PROJECTED COSTS OF IDENTIFIED OPPORTUNITIES FOR SEGMENTS OF THE STUDY AREA
(one-time costs, excluding recurring costs)

Location	Legal Access[1]	Physical Access[2]	Boat Ramps	Facility Development[3]	Fences/ Exclosures	Other	Total Costs
Alcova and Gray Reef	0	0	0	0	0	0	0
Fremont Canyon	0	0	0	0	0	316,000[4]	316,000
Pathfinder Reservoir	0	625,000	80,000[5]	295,000[6]	0	0	1,000,000
Kortes Reservoir, Miracle Mile, and Morgan Creek	0	0	5,000	0	0	2,500[7]	7,500
Seminoe Reservoir and The Dugway	29,000	425,000	77,000[8]	0	46,000	0	577,000
Total	**29,000**	**1,050,000**	**162,000**	**295,000**	**46,000**	**318,500**	**1,900,500**

[1] Cost of acquiring legal easements; fair market value as determined by appraisal.

[2] Road construction.

[3] Parking areas and restrooms.

[4] This represents the annual loss of power generation revenue resulting from use of 300 cfs for minimum instream flow.

[5] Includes both ramp locations identified as opportunities.

[6] Cost estimates for facility developments/improvements in county, state, or private management areas.

[7] Cost estimate for signs on a BOR-managed road.

[8] Includes $10,000 cost estimate for ramp extensions at Seminoe State Park.

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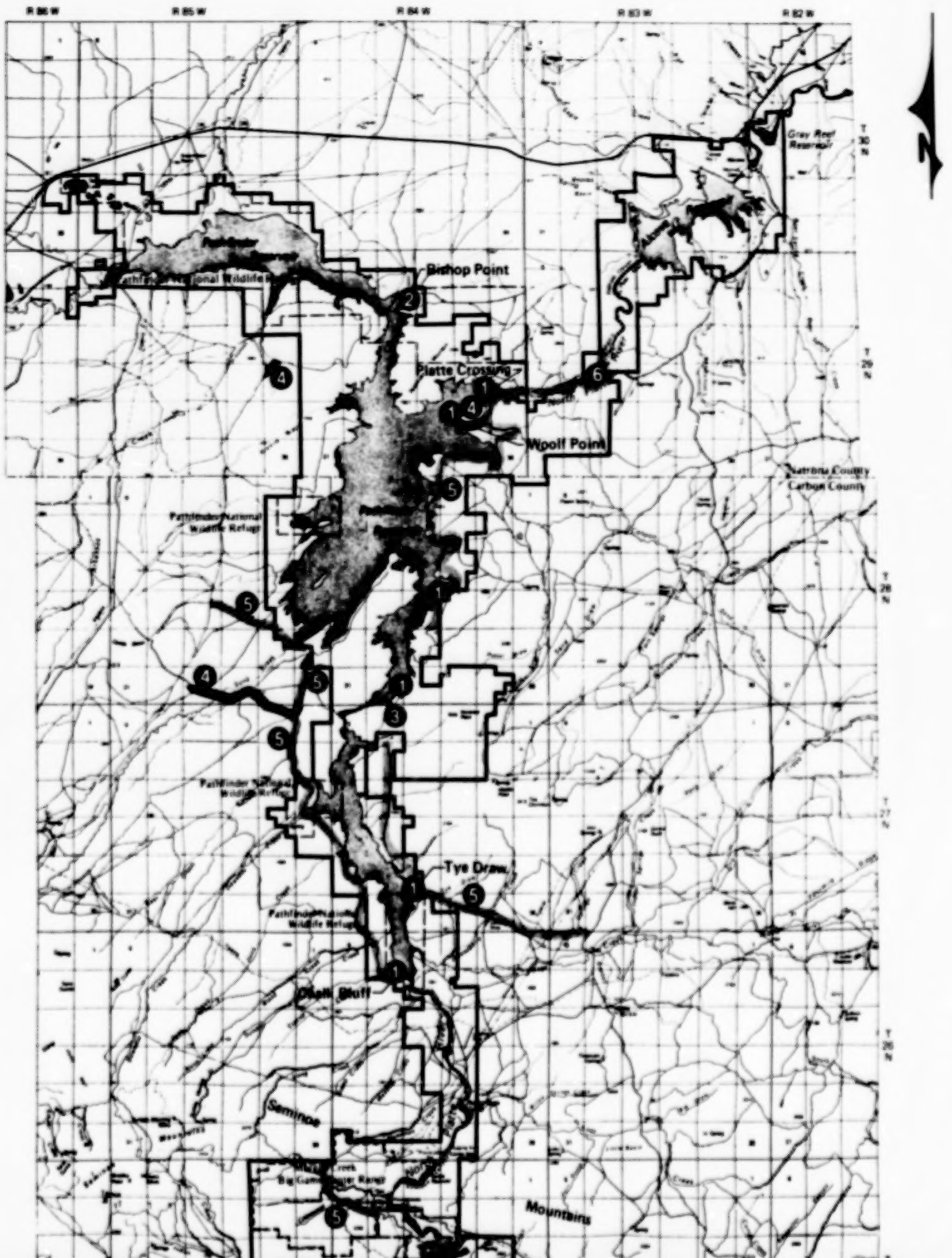
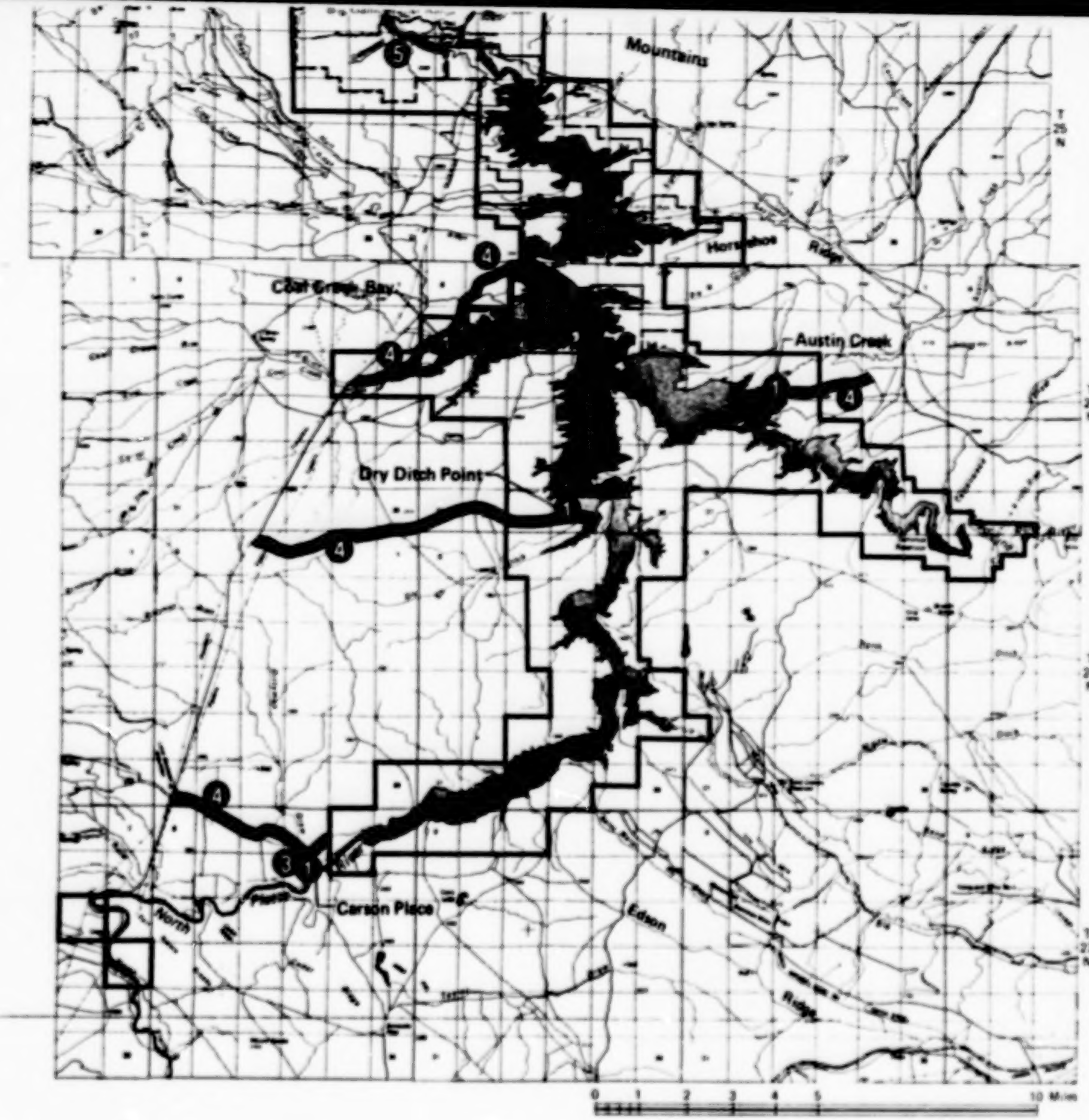

R 86 W
R 85 W
R 84 W
R 83 W
R 82 W
T 30 N
T 29 N
T 28 N
T 27 N
T 26 N
Gray Reef Reservoir
Pathfinder Reservoir
Pathfinder National Wildlife Refuge
Bishop Point
Platte Crossing
Woolf Point
Natrona County
Carbon County
Pathfinder National Wildlife Refuge
Pathfinder National Wildlife Refuge
Tye Draw
Pathfinder National Wildlife Refuge
Chalk Bluff
Seminoe
Creek
Big Game Winter Range
Mountains
1
2
3
4
5
6



① Build New Facility

② Improve Existing Facility

③ Build Campground

④ Acquire Access; build new road or improve existing road

⑤ Improve Road

⑥ Instream Flow

Proposed Recreation Facilities

facilities (for example, making gasoline and food available for sale). However, this area is managed by the state of Wyoming or by private parties, and those managers would have to initiate action to make the changes suggested by the public.

The major concerns raised about the Seminoe portion of the study area are the lack of legal and quality physical access to popular fishing areas and the lack of low-water boat ramps and other facilities along the shoreline. Public use of developed facilities on the Seminoe shoreline is limited to Seminoe State Park. Seminoe Boat Club facilities are free to members only, but other users can launch boats for a fee or buy supplies and gasoline. Because of the checkerboard landownership around Seminoe, trespass, and ORV use have been identified as concerns.

Popular fishing spots in the Seminoe area are the Carson Place, Dry Ditch Point, Coal Creek Bay, and the Austin Creek area. Legal vehicle access is not available to any of these spots, and existing physical access is poor. The primary opportunity in this part of the study area is to provide quality access to these popular fishing areas. Development of access opportunities would open miles of public land shoreline at Seminoe for public use and could attract users from other heavily used areas such as Miracle Mile and perhaps from Alcova. The estimated cost of planning, construction, and easement acquisition for access to Carson Place and Dry Ditch Point is $337,000; to Coal Creek Bay, $15,000; and to the Austin Creek area, $77,000.

Besides access, boat ramps and other facilities would provide opportunities for visitors to use more of Seminoe Reservoir, dispersing use from the two more highly developed areas and offering more recreational opportunities. Such facilities also could disperse fishing pressurethroughout the reservoir, potentially saving the WGFD some fish stocking costs. Low-water boat ramp opportunities were identified at the Carson Place and Dry Ditch Point, the estimated cost of the two ramps is $21,000.

Picnic facilities exist at Coal Creek Bay, but they get little use because their location is undesirable. An opportunity here would be to relocate these facilities to the shoreline, where a low-water boat ramp could also be developed. The estimated cost of boat ramp development is $18,000; the cost of moving the picnic tables is unknown. Near the Austin Creek area, a low-water boat ramp could be developed at an estimated cost of $18,000.

Development of roads and facilities would help to minimize trespass and ORV use, since some unauthorized use occurs because developed roads and facilities are not available. Trespass and improper ORV use could be reduced by posting of directional signs and development of cooperative agreements with owners of adjacent property. A one-time cost for these opportunities is difficult to estimate.

There is no legal access to the Seminoe Boat Club. Obtaining the necessary easements is a responsibility of that group, and a cost cannot be estimated.

Kortes Reservoir, Miracle Mile, and Morgan Creek

The major concern of those commenting about Kortes Reservoir was a lack of physical access for anglers. Many commenters about the Miracle Mile area said they think the area is being used too heavily and that litter is a problem. Some expressed concern that heavy use by recreationists and livestock adversely affects the riparian and fishery values at Miracle Mile. An opportunity was identified for a boat ramp at Chalk Bluffs. Opportunities at Morgan Creek are limited because this watershed provides domestic water for the Seminoe Camp, and the steep, winding access road is not safe for travel by all types of vehicles.

Terrain physically limits the development of access at Kortes, and this opportunity would have to be studied further before costs could be estimated. Because the terrain is steep, the benefit of foot or other physical access would have to be evaluated against the potential hazards and liabilities of providing such access.

The WGFD manages the facilities at the Miracle Mile. That agency is preparing a coordinated study and management plan in concert with the Medicine Bow Conservation District, federal agencies, and private landowners. The purpose of the plan is to address concerns raised by the public, managing agencies, and private landowners.

Development of a high-water boat ramp at Chalk Bluffs would provide additional opportunities for boater use in this portion of the study area. The cost of the boat ramp has been estimated at $5,000.

Current management of the Morgan Creek area precludes opportunities for any physical developments such as campsites, but the area continues to provide many opportunities for hunting or other casual uses. Because the road does not meet minimum design standards for public roads, the BLM recommends that the BOR place warning signs along this road as appropriate. The cost is estimated at $2,500.

Pathfinder Reservoir

The two major problems recreation users encounter in the Pathfinder Reservoir area are the lack of good quality legal access roads to public land along the shorelines, particularly the eastern shoreline, and a lack of quality facilities on the reservoir. With only 3 miles of shoreline accessible to the public, the only two existing boat ramp/camping/picnic areas can become overcrowded in periods of peak demand.

Because so few areas are accessible, ORV use has been identified as a problem. Further, without any low-water boat ramps along the eastern shoreline at the south end of the reservoir, boaters often find themselves facing high winds and dangerous waves when trying to reach the only low-water ramp at the extreme northern end of the reservoir. Many of the comments received also identified areas where additional roads and facilities should be located, some of which are in areas now managed under memoranda of understanding (MOUs) by Natrona County and/or private concessionaires.

A permanent bridge should be constructed at Pathfinder Crossing, where there is now only a low-water crossing. This would open areas now available only to persons with high-clearance vehicles who are willing to risk the low-water crossing. This is an issue members of the public have pursued for years, and a bridge appears to be the only kind of crossing for this section of river that would withstand the wide fluctuations of releases from Pathfinder Dam. A bridge at this location would provide a reliable, safe means of access to the eastern shoreline of Pathfinder. The cost of design and construction of a permanent bridge has been estimated at $450,000.

With a bridge in place, improvement of existing access roads along the eastern shoreline could be accomplished, opening miles of public land shoreline for public use. Bridge construction, combined with existing road improvement, would greatly enhance the quality of recreation at Pathfinder. Access roads would be available to visitors in automobiles, including those towing boats and campers. Access along the eastern shoreline would enhance the quality of recreation and disperse use at Pathfinder, and would be likely to attract visitors who now go to the Alcova and Miracle Mile areas.

Development of road opportunities would go far toward minimizing improper ORV use, since some of this use results from the lack of developed roads. Improvement of the road system along the eastern shoreline of Pathfinder has been estimated at a one-time cost of $175,000.

The need for at least one low-water boat ramp and parking area along the eastern shoreline of this reservoir was identified. On this shoreline (T. 28 N., R. 84 W., section 15 or 21, or in the Tye Draw area) there is an opportunity to develop a low-water boat ramp that would greatly improve boater safety by providing a safe harbor. Without such a ramp, boats now have to cross the entire length of the reservoir when weather conditions cause high winds and large waves. This ramp would also enhance access for boaters to many favorite fishing spots in the southern part of the reservoir. Such a facility also could disperse fishing pressure throughout the reservoir, potentially saving WGFD some fish stocking costs. The estimated cost of a boat ramp and parking area at T. 28 N., R. 84 W., section 15 or 21, is $75,000; the estimated cost of a boat ramp at Tye Draw would be $5,000.

Along with improved access to the eastern shoreline of Pathfinder, the public has identified the need for more facilities and for improvement of existing facilities. Specifically, commenters mentioned that more low-water boat ramps are needed and that existing facilities need to be upgraded at Pathfinder Mountain and Bishop Point. However, these areas are managed by Natrona County or by private parties, and those managers would have to initiate action to make the changes suggested by the public. The estimated costs for these facilities are as follows: another low-water boat ramp at Pathfinder Mountain, $25,000; extending the existing boat ramp at Bishop Point, $10,000; upgrading recreation facilities (for example, providing potable water) at Pathfinder Mountain, $70,000; paving the road into the Pathfinder Mountain facilities, $143,000.

No legal access is available to Bishop Point. Obtaining the necessary easements is a county responsibility, and a cost cannot be estimated. Commenters also identified the need for camping facilities at the WGFD boat ramp on the Narrows, which has been estimated at $47,000 for a 20-acre site.

The lack of public access to the Pedro Mountains also was identified as an issue by the public during the study. The WGFD is negotiating for access to the west edge of these mountains. This would provide opportunities for recreationists and hunters.

It should be noted that there are opportunities to obtain partial funding for projects on Pathfinder through local efforts. Cost-sharing by WGFD and Natrona County has been identified as needing further evaluation, as has the possibility of obtaining "1 sales tax funding." This refers to a Wyoming law that allows counties to add 1% to the basic 3% sales tax collected and use those funds for local projects. Federal challenge grants would have a high probability of generating local matching funds provided by cost-sharing options.

Fremont Canyon

The lack of an established flow in the river in Fremont Canyon severely limits the aesthetic quality of the canyon and precludes opportunities to create river recreation activities. According to the WGFD, a minimum flow of 300 cfs of water in this part of the river would create an instant blue ribbon trout fishery.

The opportunity to develop this area as a high-quality fishery should not be ignored. A new fishery would contribute to dispersal of use in the study area and could result in increases in the number of visitors to the area as a whole. The WGFD projects that development of this area would result in a tenfold increase of visitor days at this location, or approximately 7,250 visitor days per year.

One-time costs associated with this opportunity are not easily identified, but there will be a recurring cost if action is taken to establish the minimum flow. The cost of implementing a minimum flow in Fremont Canyon consists of the revenue BOR would lose because that amount of water would no longer be available for power generation. This has been calculated at $105,000 for 100 cfs per year at current values, or $316,000 for 300 cfs per year (Loutas 1990b). A one-time cost to WGFD also could be incurred if that agency should seek to purchase shoreline fishing easements on private lands along the river.

Alcova and Gray Reef Reservoirs

The major concern raised by the public regarding Alcova and Gray Reef was the current heavy use at that area, which is becoming excessive as the area's popularity increases. Use could increase even more if recreational opportunities are not improved in other parts of the study area. On the basis of information gathered during the study, it is obvious that additional facilities do not need to be developed at Alcova and Gray Reef.

The primary opportunity for this segment of the study area is to develop the other reservoirs so as to disperse recreation use throughout the North Platte River reservoir system. This would help to reduce heavy use and maintain the quality and safety of recreation at Alcova. The BLM recommends that the new facilities identified for Alcova in BOR planning documents not be developed before improvements are made elsewhere in the study area. Inventory data obtained in the future should be used to determine if proposed BOR facilities are needed at Alcova. There are no costs directly related to this opportunity.

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APPENDIX

PUBLIC INVOLVEMENT APPPENDIX

STEERING COMMITTEE MEMBERS

Organization	Member Name and Title	Address
Other Federal Agencies		
U.S. Department of the Interior Bureau of Reclamation	John Lawson, Project Manager	P.O. Box 163 Mills, WY 82644
U.S. Department of the Interior Fish and Wildlife Service	Eugene Patten, Manager Pathfinder National Wildlife Refuge	P.O. Box 457 Walden, CO 80480
State of Wyoming		
Wyoming Governor's Office	Rod Miller	Herschler Bldg. 4E Cheyenne, WY 82002
Wyoming Game and Fish Department	Bill Wichers	2800 Pheasant Drive Casper, WY 82604
University of Wyoming	Tom Buchanan	P.O. Box 3371 Laramie, WY 82071
Counties and Cities		
Carbon County Commissioners	Gary Graalman, Commissioner	229 Larsen Street Rawlins, WY 82301
Natrona County Commissioners	Eric Distad, Vice Chairman	200 North Center St. Casper, WY 82601
City of Casper	Max Torbert, Asst. City Manager	200 North David St. Casper, WY 82601
City of Rawlins	Leroy Schindler, City Manager	P.O. Box 953 Rawlins, WY 82301
Town of Sinclair	Dennis Eckes, Mayor	P.O. Box 247 Sinclair, WY 82334
Groups and Businesses		
Advisory Council, BLM Casper District	Peggy Peterson, Member	3519 Partridge Lane Casper, WY 82604
Advisory Council, BLM Rawlins District	Susan Withrow, Member	P.O. Box 1796 Rawlins, WY 82301
Arch of Wyoming	Gregg Bierei, Reclamation Specialist	P.O. Box 460 Hanna, WY 82327
Carbon County Stockgrowers	Gary Vivion	Leo Route Hanna, WY 82327
Casper-Alcova Irrigation District	Jack Miles	P.O. Box 194 Alcova, WY 82620
Casper Chamber of Commerce	Dorothy Perkins	P.O. Box 399 Casper, WY 82602
Petroleum Association of Wyoming	Cheryl M. Feraud	951 Werner Court, No. 100 Casper, WY 82601
Rawlins Chamber of Commerce	Sue Bromley	P.O. Box 1331 Rawlins, WY 82301
Seminoe Boat Club	Sherrod W. France	P.O. Box 607 Rawlins, WY 82301

PUBLIC INVOLVEMENT APPPENDIX (Continued)

STEERING COMMITTEE MEMBERS

Organization	Member Name and Title	Address
Wyoming Heritage Society	Bill Schilling	139 West 2nd St., Suite 2B Casper, WY 82601
Wyoming Mining Association	Jack Ratchye, Executive Director	P.O. Box 866 Cheyenne, WY 82003
Wyoming Public Lands Council	Carolyn Paseneaux	P.O. Box 115 Casper, WY 82602
Wyoming Wildlife Federation	John Zelazny	P.O. Box 106 Cheyenne, WY 82003
Representing:		
Alcova Cabin/Recreationists	Mike Mullen	1035 Carriage Lane Casper, WY 82609
Homeowners/Boat Club	Larry Rubis	1833 Begonia Street Casper, WY 82604
Landowners, Natrona County	Bob Cardwell	P.O. Box 197 Alcova, WY 82620
Nonconsumptive Uses	Bruce Lamberson	P.O. Box 901 Casper, WY 82602
Outdoor Recreationists	Rob Robinder, Wyoming Flycasters	4850 South Squaw Creek Road Casper, WY 82604

CONGRESSIONAL DELEGATION STAFFS

Elected Official	Staff Member's Name	Address
Senator Alan Simpson	Joe Ratliff	3003 Federal Building Casper, WY 82601
Senator Malcolm Wallop	Sue Cole	2201 Federal Building Casper, WY 82601
Senator Malcolm Wallop	Billie Jelouchan	2515 Foothill Blvd. Rock Springs, WY 82901
Representative Craig Thomas	Gail Eisenhauer	4003 Federal Building Casper, WY 82601

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